THE IRON AGE

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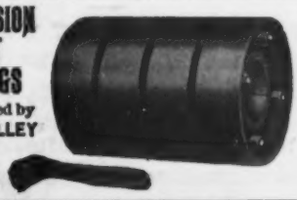

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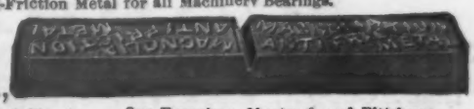

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THE IRON AGE

New York, Thursday, December 14, 1905.

The Engineering Building.

The report made to the governing bodies of the three engineering societies by the Joint Committee representing each society in the Engineering Building Committee has just been published. From it we take the following description of the principal features of the undertaking:

The public competition instituted by the Joint Committee for the selection of architects for the planning and erection of the buildings presented by Andrew Carnegie for the American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Institute of Mining Engineers and the Engineers' Club resulted in the presentation of 28 sets of plans for the building. After a careful examination of these plans the committee appointed Hale & Rogers and Henry G. Moore, associate, architects for the three engineering societies, and Whitfield & King architects for the Engineers' Club.

The frontage of the Engineering Building, Thirty-ninth street, between Fifth and Sixth avenues, New York, covers five city lots, or 125 feet front, and 100 feet deep. The building law of the City of New York requires that a building shall occupy only 85 per cent. of the lot area. Advantage is taken of this requirement to have space on all sides, thus giving the building a monumental appearance, as shown in Fig. 1, which gives a view of the building and one side. The building utilizes 115 feet of the 125 feet front and 90 feet of the 100 feet depth.

Fig. 1.—Exterior View of the Engineering Building.

The Engineering Building must meet requirements in five directions:

Offices for Individual Founder Societies.

1. It must serve the convenience of each of the individual societies which enter the building as founders. This has been secured by the proposed arrangement which is represented on the typical society office floor plan

shown in Fig. 2. The purposes of the rooms assigned will be made clear from their designations. The working offices of the representatives of the society, the reception room, board and committee rooms, important elements of the life of the society, are on the desirable south front and are favored by the windows which look to the eastward.

Assembly Rooms.

2. The building must supply to the three national founder societies and also to such other organizations as may be invited to participate in its benefits as associates, such meeting rooms and auditoriums as will be required for the annual meetings, the public reading and discussion of papers, and for scientific lectures and demonstrations. In view of the number of participant societies for which provision has been made the committee has thought it advisable to arrange for a number of assembly rooms suitable for various uses.

One of these, primarily designed for the national societies' meetings and for those of other large bodies, has been made to accommodate 1000 persons. It is shown in Fig. 3. This limit is set as being as large a number as can be expected to hear clearly the voice of a speaker. The location of this large auditorium is on the first floor above the street, so as to make elevator service for it unnecessary. The large foyer and generous corridors give ample space for withdrawal from the large assembly hall. The ample provision for exit also at the four corners of this floor is to be specially noticed as a desirable provision for safety. To enable auditors in the back of the auditorium to see clearly such diagrams and illustrations as may be on the stage the seats are arranged on a grade conforming to best modern practice in theaters. This parterre arrangement enables coat rooms to be provided, opening from the outer corridors. It will be noticed further, by referring to Fig. 4, that the large auditorium floor is reached from the great central rotunda on the street floor by generous stairways and that it can also be reached from carriages entering the driveway and moving continuously as they receive or discharge their passengers. The room for preparing apparatus and exhibits for the stage is conveniently served by a large freight elevator, so that heavy machinery and apparatus can be easily handled.

On the floor above the large auditorium are two assembly rooms occupying the principal portion of the area. These assembly rooms may be used independently for lecture purposes, or one may be made auxiliary to the other and used as a foyer or conversation room. As to the two rooms adjoining, they may be used in common when desired, as, for instance, for purposes of general reception or conversazione. Auxiliary smaller rooms on this floor are provided and provision is made for the service necessary for light refreshments or luncheon.

Fig. 2.—Plan of Mechanical Engineers', or Eleventh, Floor.

On the floor above a number of small lecture halls are provided suitable for ordinary meetings of scientific and engineering societies and for meeting of sections at the time of general conventions of national organizations.

It is expected that there will be a great demand especially for the small meeting rooms for scientific purposes. They will be supplied with electric current, with compressed air and with gas and water. The meeting rooms of all sizes will be fitted for the use of the projection lantern and will be unique in their completeness for the purposes for which they are intended. The board rooms of the society floors will be large enough for the holding of small professional meetings when occasion may require.

Library and Reading Rooms.

3. A crowning detail in the planning of the building has been the provision on the two upper floors for the libraries of the various societies, shown in Fig. 5. It is the purpose of the societies so to administer the library of each that by bringing them together there shall be created a working and reference library of the highest

possible value and completeness as respects engineering science and practice, which shall be unequaled anywhere. The societies have recognized that there is before them an unexampled opportunity, and it is their desire to avail of it to the highest degree. In seeking this end the entire top floor is to be devoted to reading and reference rooms, to working alcoves, to rooms for photographic reproduction, and for drawing and similar library work. The roof will be specially constructed to secure the best illumination. The location of the reading rooms at the top of the building will be quiet, cool, airy and free from dust. The floor below the library reading rooms will be devoted to the book stacks, although when first the societies enter the building the alcove construction in the reading and reference rooms will take care of the nucleus of the future library which the societies will bring with them. This will leave the book stack floor for growth as participants will have use of the auditoriums of the desired size.

General Business Requirements.

5. The building must also serve as a business office for the founder and the associate societies. Attention is called to the driveway in Fig. 4, whereby access is had on the street level and under cover to the freight elevator, both for boxes of books and for other merchandise moving inward and for mail sacks moving outward. This driveway also serves for carriage access to the auditorium and passenger elevators. It gives facility for unloading by gravity to the coal pockets of the heating plant without handling. The general convenience of the building is also served by the receiving and shipping office at the rear, through which all goods in and out will be handled. There is also the bureau of information at the right of the main entrance, where general

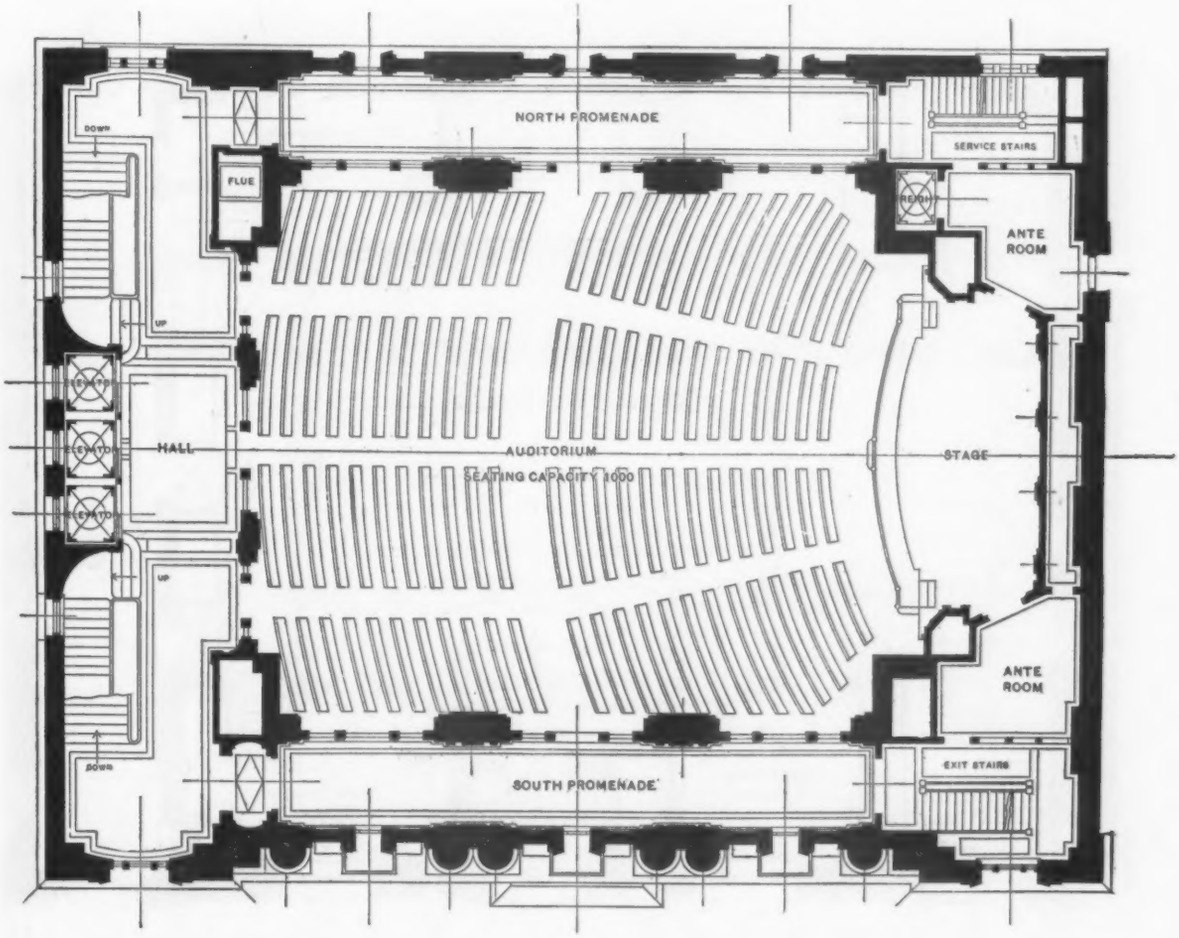

Fig. 3.—Plan of Auditorium, or Third Floor.

the library shall increase in size hereafter. It is believed that by the co-operation of the New York Public Library on the adjoining block and with the interest and strength which the societies will furnish, the library in the Engineering Building can be made the most important engineering library of the country. The committee has tried to provide ample space to accomplish this end.

Office Accommodations for Other Societies.

4. The building is also to furnish office accommodation for a large and continually increasing number of societies which have engineering or some other department of science as their principal object; such are, for example, the New York Electrical Society, the Society of Naval Architects and Marine Engineers, the Heating and Ventilating Engineers, the American Gas Light Association, the National Electric Light Association, the Society of Chemical Engineers, the Association of Edison Illuminating Companies and many others. For these organizations the building will offer office areas of varying sizes whose arrangements will be adjusted to the requirements of such participants as shall hereafter be made known. Such questions can be answered, visitors directed and some routine business transacted. This office will also be a suitable location for the telephone exchange, the telegraph and the sub-postoffice.

By a business arrangement, formed under legal advice and forming part of the deed to the property to the east of the building, a restriction has been placed which prevents the erection on that lot of a building more than 60 feet high. This restriction runs with the land and secures light and air for the building on its eastern front above the third floor. The westerly wall is built 10 feet within the property line, so that openings for light and air should always be left on that side and on the rear, even if high buildings should be hereafter built on adjoining property to the west and the north. The committee contemplates finishing the building on all four sides and not merely on the south façade, in order that its monumental character may be seen and recognized from every point of view.

The holding corporation which is to administer the building for the founder and associate societies was formed by special charter in the State of New York in

May, 1904, and is called "United Engineering Society." Its nine trustees are chosen, three each, by the councils of the Electrical, Mechanical and Mining Engineers, and control the building and are responsible for its financial administration. Its charter and by-laws have been the occasion of much careful thought by the societies and by legal counsel, and the title to the land rests in this body corporate. The land passed to these trustees in January and they are paying the interest and other expenses during construction. It is the unusual character of the trust and its functions which are largely responsible for the delay in beginning construction.

The contract for construction was signed in July; the excavation for the foundations was started at once and the work of construction has now commenced. The contract limit is 15 months to date of expected completion.

The Joint Committee is constituted as follows: Charles F. Scott, Bion J. Arnold, S. S. Wheeler, American Institute of Electrical Engineers; C. W. Hunt, James M. Dodge, F. R. Hutton, American Society of Mechanical Engineers; A. R. Ledoux, Charles Kirchhoff, Theodore Dwight, American Institute of Mining Engineers. Ralph W. Pope is secretary.

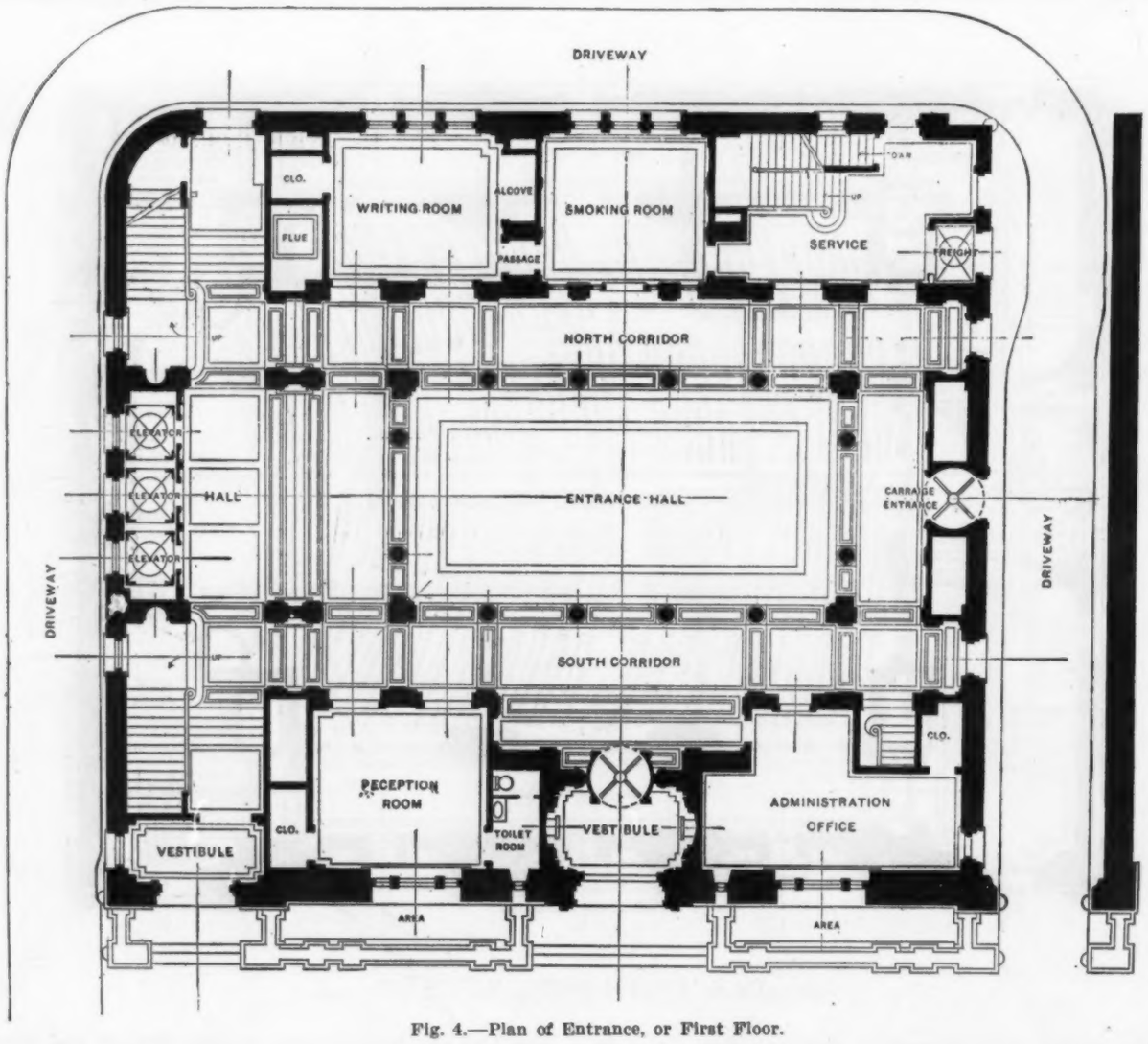

Fig. 4.—Plan of Entrance, or First Floor.

The Bucyrus Company's Steel Casting Plant.—The Bucryus Company, South Milwaukee, Wis., is erecting a steel casting plant with one open hearth furnace. The main building will be of steel construction 60 x 260 feet. The lean-tos, which will contain the open hearth furnace, annealing furnace and drying ovens, will have a 40-foot span. The open hearth furnace will have a capacity of 10 tons and will be of the stationary type. Two traveling cranes will be installed, one of 5 tons and the other of 20 tons capacity with a 5-ton auxiliary.

Recent Customs Decisions.

A Decision in Custom House Practice.

The Board of United States General Appraisers rendered a decision December 8 which is of general interest to importers. The case stood in the name of Benziger Brothers, New York, the issue being whether collectors of customs have the power to reliquidate importers' entries in order to defeat a protest filed against the officers' original liquidations. The protests in question were filed within ten days succeeding the original liquidation of the respective entries. After the protests were filed and before they were sent to the board the collector deliquidated the entries, assessing the merchandise at 45 per cent. ad valorem, evidently under the provision in paragraph 97 of the act for "articles and wares composed wholly or in chief value of earthy or mineral substances . . . decorated." No protests were filed against these reliquidations. The protests under consideration were forwarded to the board some four years after the reliquidation of the entries. The question was presented whether the collector's reliquidation of the entries while these protests against the original liquidation were still in his hands rendered the protests ineffective.

It has been frequently decided in case where no protest was filed against the original liquidation of an entry that a voluntary reliquidation by a collector which results in changing either the rate or amount of duty will be considered an abandonment of his previous liquidation and give a new right of protest.

Judge Waite, who writes the decision for the board sustaining the importer's protest, says in part: "We know of no case, however, which goes so far as to hold that a collector, by reliquidating an entry, can defeat a protest filed against his original liquidation and make it

necessary for the importer to file a new protest to preserve his rights. An alternative view, and one in our opinion more in accord with reason and justice, is to regard the collector's power to make a reliquidation which will amount to a new decision respecting any merchandise covered by a protest as suspended while the protest is pending, except in so far as the collector may exercise that power to comply with the demands of the protest, which we think he may do. One recognized purpose of a protest is to advise the collector of an error in his action and enable him to correct it if he deems proper. If he does not see fit to accede to the importer's claims, then it is his duty to forward the protest to the board and, we believe, to refrain from further action in the matter until the question at issue is decided.

"We accordingly hold that the collector's attempted reliquidation of the entries in these cases was unauthorized and void and that the protests made against the original liquidation are valid.

"The protests are sustained and the collector's decision reversed."

Flexible Galvanized Iron Tubing.

The board has denied a claim made by Pitt & Scott, Limited, New York, for a reduction in duty on importations of flexible galvanized iron tubing. The merchandise was assessed at 35 and 45 per cent., but as the protestant failed to appear at the calendar call or put in any evidence in support of his contention the customs court overrules the protest, it being assumed that the action of the collector was correct.

Corundum.

In a decision promulgated December 7 the Board of Appraisers affirmed the assessment of duty on corundum imported by the Central Vermont Railroad Company at Burlington, Vt. The merchandise was described in the invoices as corundum ore concentrated and was assessed for duty by the collector at the rate of 1 cent per pound under the provision in the tariff law for emery grains and emery manufactured, ground, pulverized or refined. It was claimed by the railroad company that the merchandise should be awarded free entry under the provision for emery ore.

Solid Steel Balls.

Sub-board 2 of the General Appraisers has sustained a claim filed by Letzerich & Co., Galveston, against the action of the collector in assessing duty at the rate of 45 per cent. on solid steel balls. It was maintained by the importers that the articles were properly dutiable at a lower rate under the provision for forgings.

The Philadelphia Foundrymen's Association.

The regular one hundred and fifty-second meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club in that city, Wednesday evening, December 6. There was a good attendance and addresses were made by Samuel McCune Lindsay, secretary of the National Child Labor Commission, New York, on the subject "Why Pennsylvania Protects Its Children," and A. J. McKelway, assistant secretary, of Charlotte, N. C., on the subject "The Mill *vs.* the School; or, The Struggle for the Child in the South." Both addresses were highly interesting and the latter was illustrated with numerous lantern slides.

The meeting was the annual one for the nomination of officers of the association for the ensuing year, and the entire list of officers, Executive Committee and trustees was nominated for re-election, with the exception of one member of the Executive Committee. Thomas B. Harkins, Bristol, Pa., withdrew, and George C. Davis, official chemist of the association, was nominated in his place. After a short discussion on the addresses made the meeting adjourned.

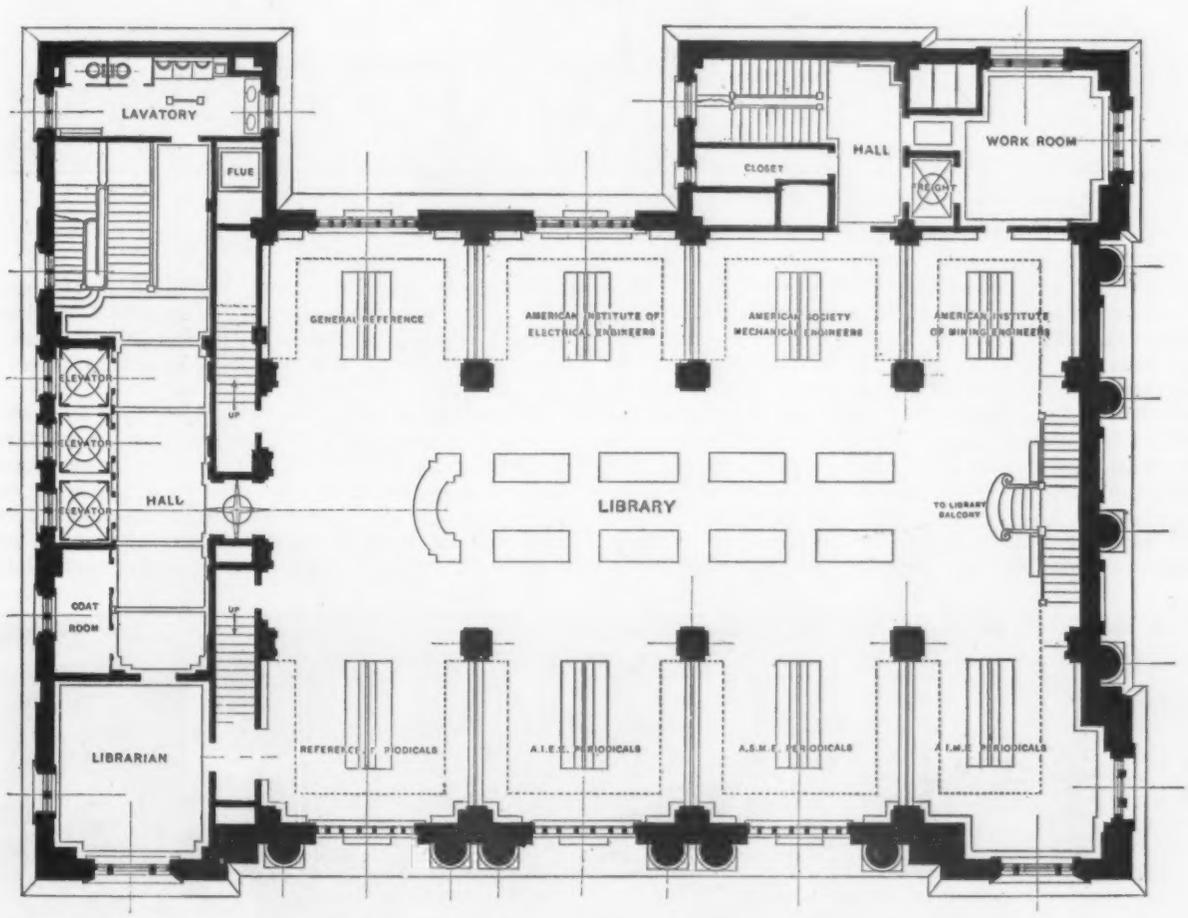

Fig. 5.—Plan of Library, or Thirteenth Floor.

Traffic to and from Lake Superior through the St. Mary's ship canals will aggregate nearly 44,000,000 net tons for this season, or about 8,000,000 tons in excess of the record season. Up to December 1 the total was 43,000,173 net tons, as against 30,575,241 tons for 1904.

The New Bliss-Leavitt Torpedo.

BY S. D. V. BURR.

With the introduction of gunpowder in Europe came bombs, mines and torpedoes, the fact being early recognized that large quantities of the explosive discharged in one place were more destructive than the scattered charges of small amounts. Land bombs and particularly mines were used successfully, but the difficulties surrounding the marine use of gunpowder were of such a nature and the appliances adopted were so crude that it has been only in recent years that efforts in this direction have resulted in any degree of certainty. Previous to our own Civil War there was a possibility of a torpedo doing some damage to an enemy, but it was a destructive element that could not be relied upon and one that was liable to scatter destruction among its friends. Most of the first attempts consisted merely in floating the bomb or torpedo and leaving it alone in the hope that it would strike the enemy or that the enemy in his ignorance would run into it. The whole plan increased the chances of doing harm, but the results could not in any case be foreshadowed. Of course in those days the science of naval construction and proceeding was in a crude state of development and the refinements now common were unknown. The use of explosives on shore has always possessed one great advantage—the time of explosion could be delayed indefinitely—but the marine torpedo had to fire upon contact or at a predetermined interval, which was unalterable after it had once left its base.

Controllable torpedoes, both as to direction of travel and time of firing, have not met with the success attending those of the independent type. The mechanism necessary to their operation has always been awkward and has always served as a hindrance to efficient working. One of the earliest of these and the one that was the forerunner of all subsequent devices of the kind was the Sims. This was driven by an electric motor carried by the torpedo and receiving current through wires from the shore or ship. The cable was coiled in the torpedo and paid out as it advanced. Steering was also done electrically. The entire outfit was clumsy and could not be hid from the enemy, as those in control had to maintain the torpedo in sight to some extent in order to guide it.

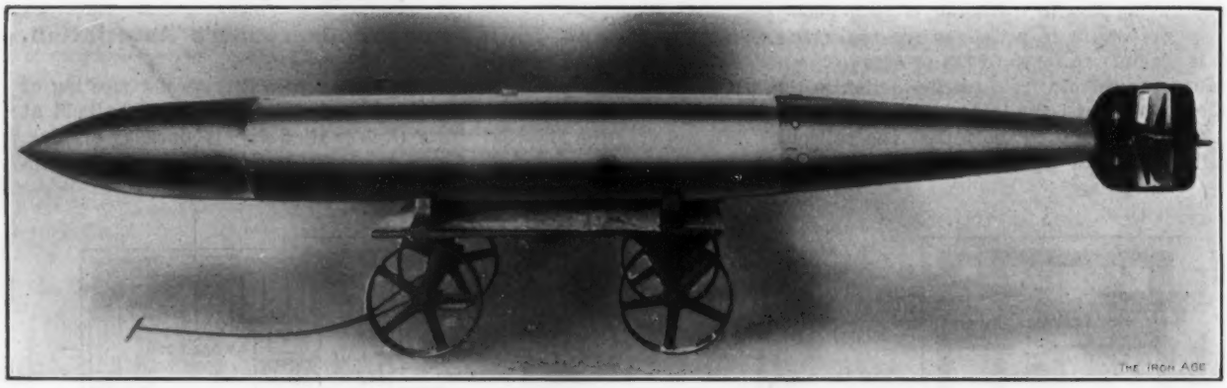

Fig. 1.—The Bliss-Leavitt Torpedo.

The outrigger and floating types were used with some degrees of success during the Rebellion and in the naval engagements in Europe. They generally depended upon contact for explosion, although the time fuse was common. The outrigger type consisted of a contact bomb carried on the end of a long pole projecting from the bow of the ship. This form appeared to appeal particularly to naval commanders of 50 years ago, perhaps because of the daring required to handle the vessel carrying the charge. To some degree the work resembled that demanded of the commander of a modern torpedo destroyer.

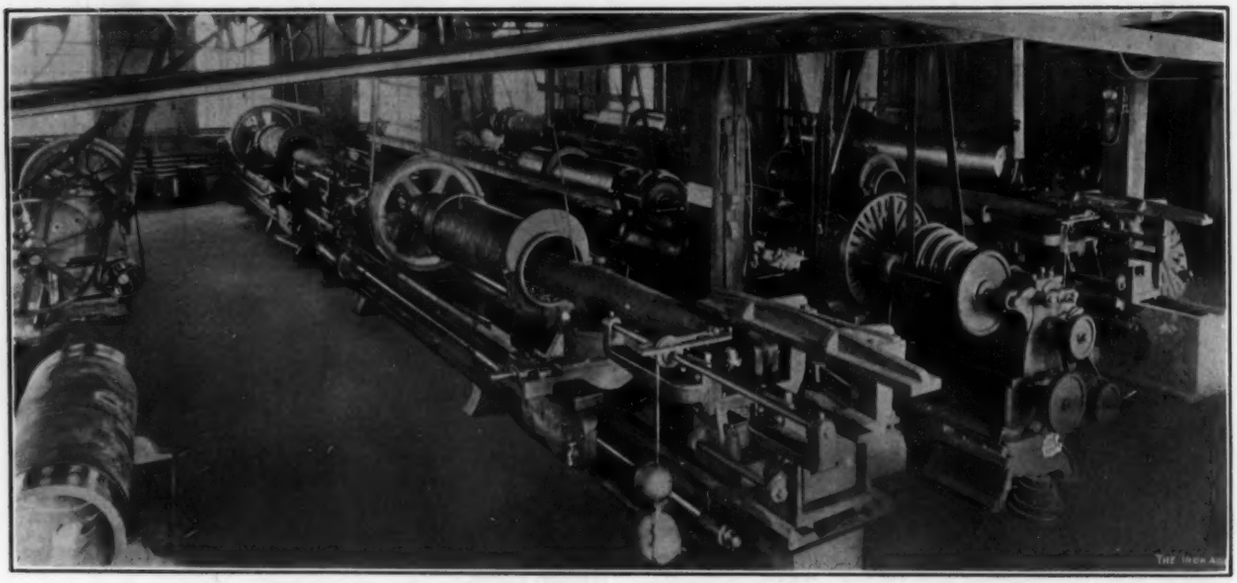

Fig. 2.—Lathes for Roughing and Finishing Inside and Outside of Flask.

The Howell Torpedo.

The Howell torpedo, brought out in the early 70's, marked a long step in advance and introduced an element that has since been employed by the navies of all countries. Rear-Admiral Howell placed in his torpedo a heavy wheel. This wheel, just before the launching of the torpedo, was brought up to a speed of 9000 or 10,000

revolutions a minute. Through a suitable reducing gear the motion was transmitted to the propeller shaft. The energy stored in the wheel was thus utilized for driving the torpedo. But this was not the most important part played by the wheel. Advantage was taken of the gyroscopic action of a mass revolving at high velocity. We are all familiar with the persistency with which the wheel of the common gyroscope maintains its plane of revolution and the resistance it presents to any effort to make it change this plane. It and its containing frame can be moved in any other direction as freely as an inert mass, but effort must be exerted to overcome or move it from its plane of action. The power required to move the wheel in this way depends upon the weight of the wheel and the speed of rotation; the heavier the wheel and the higher the speed the greater the force required. The wheel therefore served as a rigid base, acting always to maintain a constant direction in the torpedo. It is evident that when the torpedo encountered a cross current, tending to deflect it from its course, this tendency would be resisted by the gyroscope. This improvement increased the accuracy of fire and also the speed to a rate of 28 knots.

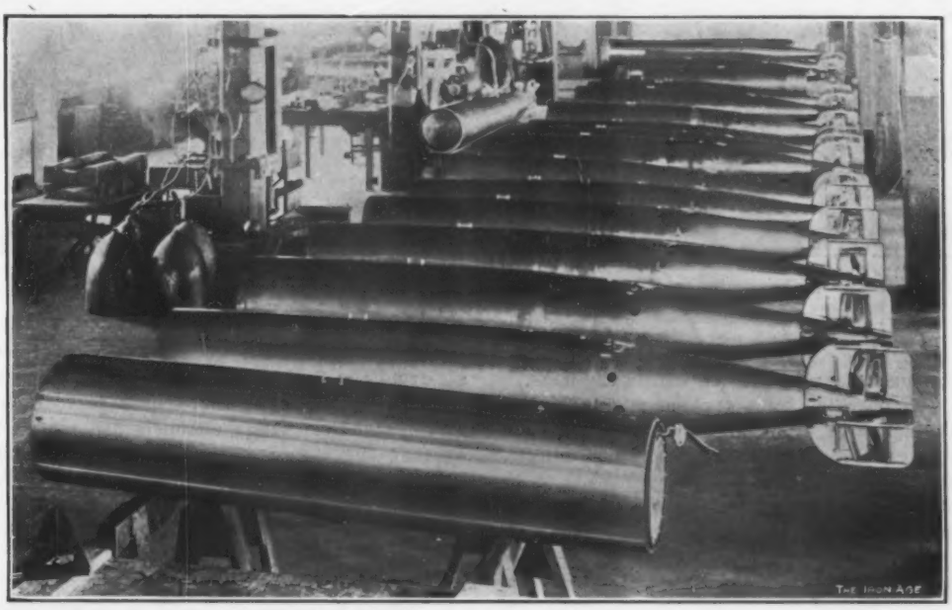

Fig. 3.—After-Bodies and Flasks Ready for Heads.

The latest Howell torpedo was provided with a wheel weighing over 100 pounds. It was built of steel and turned and trued in the most careful manner. To obtain a true balance was the most serious part of the construction. The writer once had the opportunity of seeing the testing of one of these wheels at the Pratt & Whitney works. It was mounted as it would be in the torpedo and gradually brought up to a speed of 20,000 turns per minute, at which speed it ran without perceptible vibration. But at a speed of 12,000 to 14,000 turns the vibration could be distinctly felt on the floor several feet away. Once in a while the great strains due to the high speed would result in permanent distortion of the wheel.

The Russian Torpedo.

The Russian navy is equipped with the Schwartzkopff torpedo, a modification of the Whitehead. But it contains a very ingenious device for keeping the torpedo at a constant depth below the surface. Just back of the firing head is a small transverse chamber to which water is admitted through suitable openings. A piston in one wall of this chamber is pressed upon by the water. A set of coiled springs is so arranged as to resist the inward movement of the piston. It is apparent that at a certain depth the pressure upon the piston and the action of the springs will counterbalance each other; it is also apparent that by changing the tension of the springs the depth at which this will take place can be altered as desired. Below that point the piston will be forced in by the increased pressure of water and above that depth will be forced outward by the action of the springs. This motion of the piston is communicated to the horizontal or diving rudders. Should the torpedo go too deep the piston would be forced in and the forward ends of the rudders elevated; the reverse movement would take place if the immersion should be insufficient. When one of these torpedoes dives into the water the first part of its course is made on a wave line which crosses and recrosses the true line, to which it is brought by the action of the piston upon the rudders.

With the introduction of the cigar shaped torpedo came the double driving propellers—two sets of blades carried on the same shaft, but turning in opposite directions. Rigid vertical fins were tried for the purpose of keeping the torpedo on an even keel, but not with much satisfaction.

The launching tubes and method of launching vary but little in different navies. The exposed tube for launching above water is provided with a rear door for closing the tube after the insertion of the projectile. The submerged tube has two doors, one at each end, like the ordinary air locks used in engineering operations. The torpedo is discharged by a small quantity of powder placed in the tube behind it.

A torpedo fired from a moving base like a ship has a wide chance for error, and any initial error is rapidly multiplied as the distance from the base increases. A further source of error is the torpedo entering cross currents. The Howell wheel tended to correct this to some extent, but a more delicate device, and one that would be more positive and quicker on its action, was needed. This was provided by the Obry gear, mentioned later.

The Bliss-Leavitt Torpedo.

The E. W. Bliss Company, Brooklyn, N. Y., is now at work on a large order for its Bliss-Leavitt torpedoes from the United States Government. These embody the latest improvements in torpedo design and construction and also embrace many features peculiarly their own. The 18-inch torpedoes have a length of 16 feet 6 inches. The charged weight, ready for ejection, is 1300 pounds. They have an effective range of 2000 yards, as against 1500 yards for the Whitehead torpedo. Their speed is 36 knots, as against 28. The 21-inch torpedoes, the largest size, have a guaranteed range of 3500 yards, and will probably reach 4000 yards.

The shell of these torpedoes is composed essentially of three parts, namely, a central flask, a head and an after body. The flask, which is a little over one-half the total length, is made of a special steel having an elastic limit of 90,000 pounds and a tensile strength of 128,000 pounds. It is delivered to the works as a cylinder having a thickness of over 1 inch and is turned down

to a thickness of ⅜ inch. This is done as a precaution in order to reveal any defects in the metal. The great strength is required by the use to which the flask is to be put. It serves as a reservoir for the air operating the engine, and is charged at a pressure of 2250 pounds to the square inch. The ends of the flask are closed by a dished plate resembling the manhole plate of a boiler. This plate rests against a ring secured within the flask.

The torpedo is operated by a turbine engine having two wheels 11 inches in diameter and each having 84 buckets. The wheels make 1200 revolutions per minute. The engine develops 110 horse-power as against 35 to 40 in the 3-cylinder engines heretofore employed.

The propeller shaft is driven directly from the engine. The rear propeller is rigidly mounted on the shaft, while the forward one is carried by a sleeve. The latter propeller is moved in the opposite direction by means of the usual system of three beveled gears. This, as explained above, insures an even keel.

The direction of flight is preserved by an Obry gear. This consists of a small gyroscope wheel so connected that any deflection of the main body of the torpedo from the true course is corrected by the action of two small rudders. The action is quick and positive and of course infinitely more effective than the original Howell device.

The gyroscope wheel is a sphere of steel about as large as a baseball and weighing less than two and a half pounds. It is driven in a most effective and ingenious way. One-half of the wheel spindle is hollow to receive air from the flask. The wheel proper is formed with a series of channels arranged in a central plane vertical to the spindle. These channels are placed tangentially so that the escaping air acts on the principle of the Barker mill. By this means a speed of 18,000 revolutions per minute is obtained.

Each torpedo is provided with two heads—a practice and a war head. When fired with serious intention the war head contains a charge of 125 pounds of wet gun cotton. This head is formed of two halves, cut longitudinally and brazed together, the joint being made after a saw-tooth pattern. So accurately is this job performed that it is impossible to detect the joint after the piece has been finished. The war head is provided with a device for cutting through a protective netting. This is

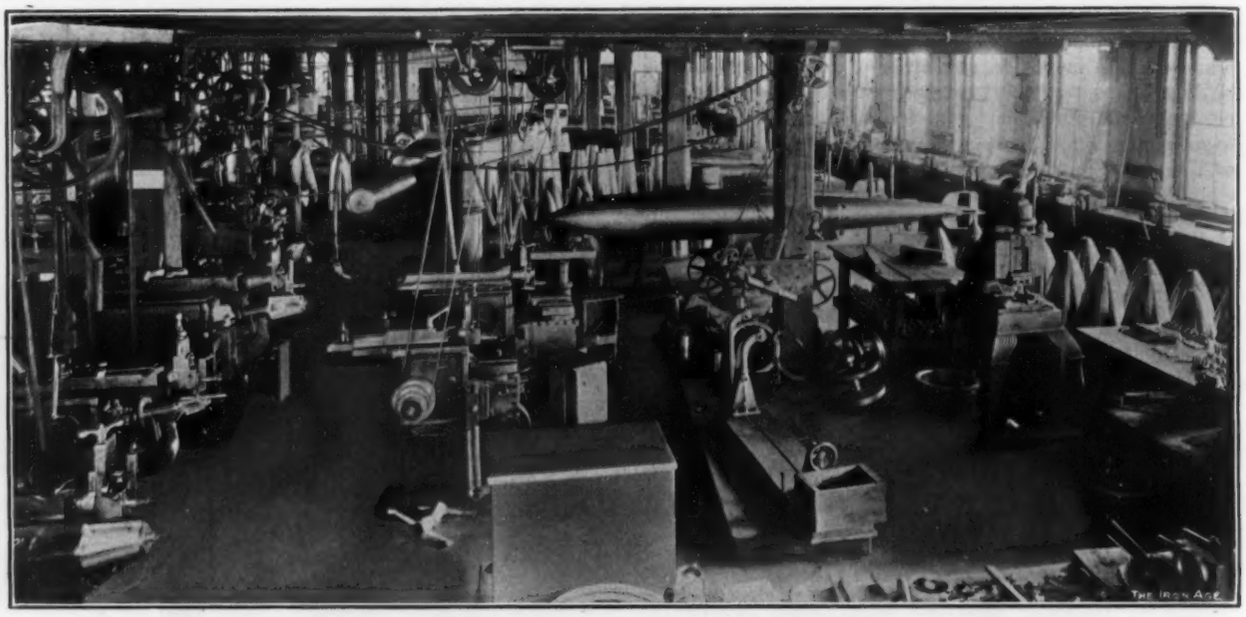

Fig. 4.—View of Center Aisle of Torpedo Floor.

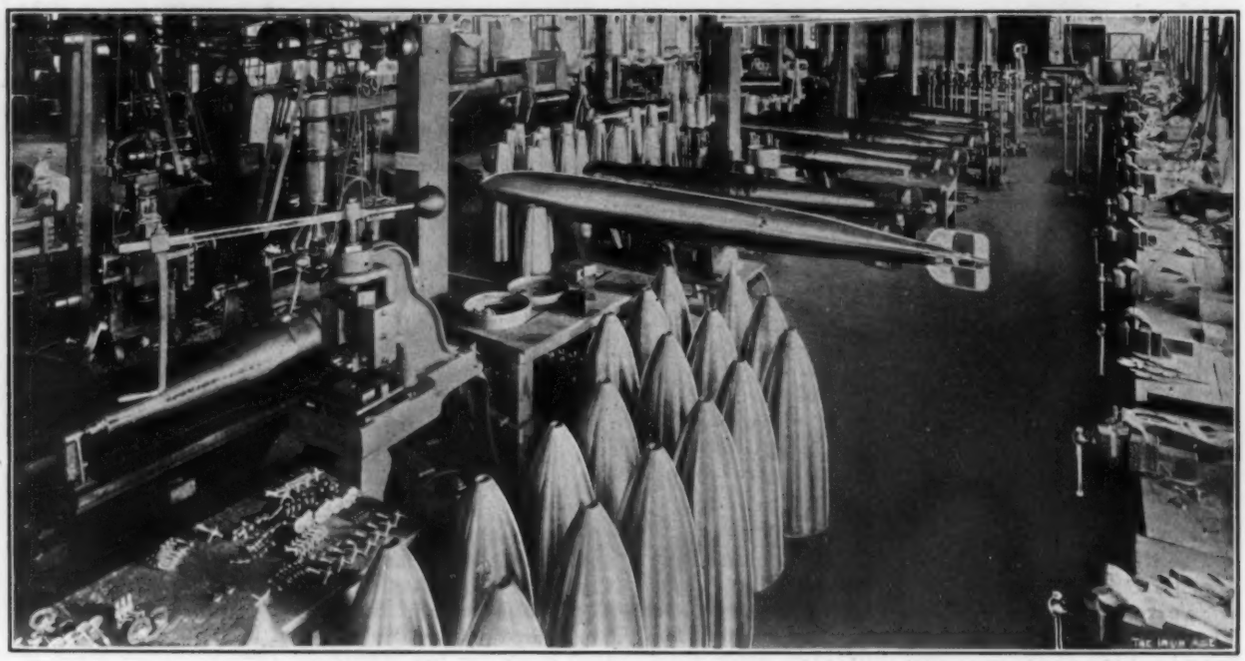

Fig. 5.—Finished Torpedoes in Background, War Heads in Foreground.

shaped like an ordinary auger and is revolved by the motion of the torpedo through the water.

Between the flask and engine compartment is an immersion chamber. This is provided in order to sink the torpedo if it should fail to strike. It is thought best to sink it rather than leave it floating on the surface, a menace to both sides.

Torpedoes of this pattern are of particular advantage, since they can be employed with submerged discharging tubes. This was a dangerous operation with some of the older types, as there was always the possibility of the ship running the torpedo down.

The Bliss Company has perfected a very perfect machine for cutting the buckets of the propellers. These buckets are made integral with the body of the wheel. The machine resembles a double spindle lathe, the work being held on the tail stock. There are two cutters which alternately recede and advance toward the rim of the wheel, which is held in a horizontal position. At the same time the cutters revolve about a common center. One cutter operates on one wall of the bucket and the other on the opposite wall. The result is a bucket perfect in contour and having highly finished surfaces.

Mexican Railroad and Trade Notes.

DURANGO, December 6, 1905.—The Pan-American Railway Company is said to be about to construct a line 42 km. in length and of narrow gauge between San Geronimo and Juan Felipe, in the State of Vera Cruz, to facilitate the movement of asphalt between the deposit and the refinery and also to operate as a common carrier.

A number of amendments have been made to the concessions granted to the intercontinental railroad syndicate covering the construction of lines from the group of mines, La Luz, to the city of Leon, and to Dolores Hidalgo, in the State of Guanajuato. These amendments require that at least 20 km. of the road be completed within two years and that a similar distance be finished each successive year thereafter so as to complete the main line from La Luz to Leon and the branch line to Dolores Hidalgo within six years. Five additional years are allowed for the construction of a branch line from Leon to Guadalajara at the rate of 40 km. annually.

The Southern Pacific Railway Company is actively at work on extensions in Sonora. One of these is a line from Hermosillo to Guadalajara; another is a branch from Batamopilas to the Yaqui River.

The concession obtained by Oscar J. Braniff for a line from his hacienda, in the State of Guanajuato, to the cities of Leon and Salamanca has been amended, the dates for beginning and completing the work having been extended.

Rafael Davila and Salvador Cardenas Peña, Monterey, have obtained a concession from the State of Coahuila for a line between Allende and the town of Zaragoza, to be in operation within two years' time.

A. H. McKay, who represents Canadian capitalists interested in lumbering operations, is about to apply for a concession to build a road some 30 miles in length from a point in the Blalock colony, in the State of Tamaulipas, to connect with the Gulf division of the Mexican Central at Aguelles, and also for water power privileges for the purpose of establishing saw mills.

Industrial Notes.

Business continues active in hardware, iron and steel, mining and agricultural machinery and vehicles. Reports from the capital are especially favorable in regard to sales of these products and manufactures.

The concession applied for by L. C. Browne for the erection of a plant in the Federal district for the manufacture of automobiles and bicycles has been granted. The Mexican Automobile & Bicycle Mfg. Company is now being organized.

The principal hardware and machinery supply houses in the City of Mexico have united in a petition to the railroad companies asking that their traveling representatives be permitted to travel over the lines at a reduced rate of fare, and also be allowed to carry double the quantity of baggage carried by ordinary passengers.

An electrical power company has been formed with the formidable title of La Compañia Explotadora de las Hidro-Electricas del Rio Angulo, of which E. Brunel is manager, with headquarters in Irapuato. The company has obtained a concession to generate electrical energy from the waterfalls of the River Angulo, in Michoacan, and purposes supplying power to a number of cities in the State of Guanajuato.

The Mexican Car & Foundry Company turned out its first finished work in November in the form of four flat cars for the Desagüe del Valle de Mexico railroad.

Mexico's production of copper in 1904 aggregated 50,945 tons, being an increase over the preceding year of 5630 tons.

A large electric power plant is projected for the city of Monterey to supply power to the manufacturing industries there. The enterprise is being promoted by A. W. Lillienthal, who has obtained a concession to use water from the river Pilon and to establish the necessary works. A still more extensive enterprise of the same kind is being agitated in Parral, Chihuahua, where the firm of Stallworth Brothers is said to have made a contract which will result in the building of "the largest power plant in the republic."

Less important water power concessions have been granted to the following companies and individuals: La Paz Agricultural Company, which owns a large tract of land in the district of Alamos, Sonora, to use for irrigation 4000 liters of water per second from the Mayo River; the heirs of Reynaldo Deffis, to use for motive power 558 liters per second from the river Tequisquipam, in the State of Mexico; the Pinos Altos Mineral Company, to utilize for motive power 1666 liters per second from the river Jesus del Norte, Chihuahua; Alberto Schuler of the City of Mexico, to use 10,000 liters per second from the Rio Minas, Canton of Jalacingo, in the State of Vera Cruz, for power and other purposes.

J. J. D.

Railroad Rates Reduced in Illinois.

After a contention of more than three years the railroads operating in the State of Illinois will be compelled to reduce their freight rates an average of 20 per cent. on January 1, according to a decision just rendered by the Illinois State Board of Railroad and Warehouse Commissioners. Rates on shipments inside the State and outside of the city of Chicago have been from 20 to 50 per cent. higher than shippers in neighboring States have had to pay the same railroad interests. Until July 11 of this year the Chicago shippers were active in the fight, but in order to get them to withdraw the railroads granted them concessions averaging 30 per cent. The fight for lower rates, however, was continued by the shippers outside of Chicago with renewed vigor and the Railroad and Warehouse Commissioners were compelled to act. Commodity rates are not affected by the reduction, but if higher than the new rates established will probably be reduced. To what extent manufacturers and shippers of iron and steel products, hardware, implements, &c., will benefit cannot be ascertained at present, as the revised classification has not yet been issued.

The Crucible Steel Company of America, Pittsburgh, will adopt an aggressive policy to secure foreign business. The foreign sales department, formerly located in New York, has been transferred to the main offices in the Frick Building, Pittsburgh. Alexander Thomas, secretary, is now in Japan to establish an agency there. The company has never had an agency in Japan, but realizes the possibilities of that country as a market. Other important agencies will also be established in foreign countries where the company is not now doing business.

The Pittsburgh Foundrymen's Association has arranged to hold monthly meetings during the winter at the Hotel Henry, Pittsburgh, at which dinner will be served. The first was held December 5, and the next will occur on the second Tuesday of January, but thereafter the first Tuesday of each month will be the regular date.

An English Coil Clutch Reversing Gear.

BY FRANK C. PERKINS.

The coil friction clutch herewith illustrated is particularly intended for driving and reversing rolling mills so that the engine may run continually in the same direction, thus conserving the energy and time otherwise lost in reversing the motion of the heavy parts. It is built by the Consolidated Engineering Company, Slough, England, and in three of the illustrations is shown in the form prepared for the copper rolling mill of the Trefileries du Havre Company, Paris, France. It is stated that these clutches have also been applied very successfully to gas engines, enabling them to be started with light load, and a modified design has been adopted for slow speeds, being used in England in connection with crane work.

A detail of a clutch designed to transmit 1000 horsepower at 40 revolutions per minute is shown in Fig. 1. Fig. 2 shows the steam starting gear for operating the clutch, and Fig. 3 the arrangement of the coil clutch reversing gear at the copper rolling mill above referred to. By placing the reversing gear between the rolls and the engines the latter are allowed to run in one direction continuously regardless of the direction the work is taking through the rolls, and the stored energy in the heavy fly wheel is not wasted. It has been claimed that a continuous running engine may be substituted for an engine of the reversing type having four times the indicated horse-power.

The copper rolling mill in which the coil clutch reversing gear is used has rolls 11½ feet wide and 33½ inches in diameter, operating at 40 revolutions per minute. The clutch has two steel coils which surround drums keyed on the shaft to be reversed, and the outer end of each coil is fixed to a gear wheel which is loose upon the shaft, these wheels being driven continuously in opposite directions and carrying the coils with them. The drums are of chilled cast iron and are 36 inches in diameter, and the shaft is 16 inches in diameter. On the shaft between the inner ends of the coils there is a sliding collar which comes in contact with a bell crank lever when moved in either direction. This action tightens the last turn of the corresponding coil on the drum and the motion of the gear wheel causes all of the turns of the coil to grip the

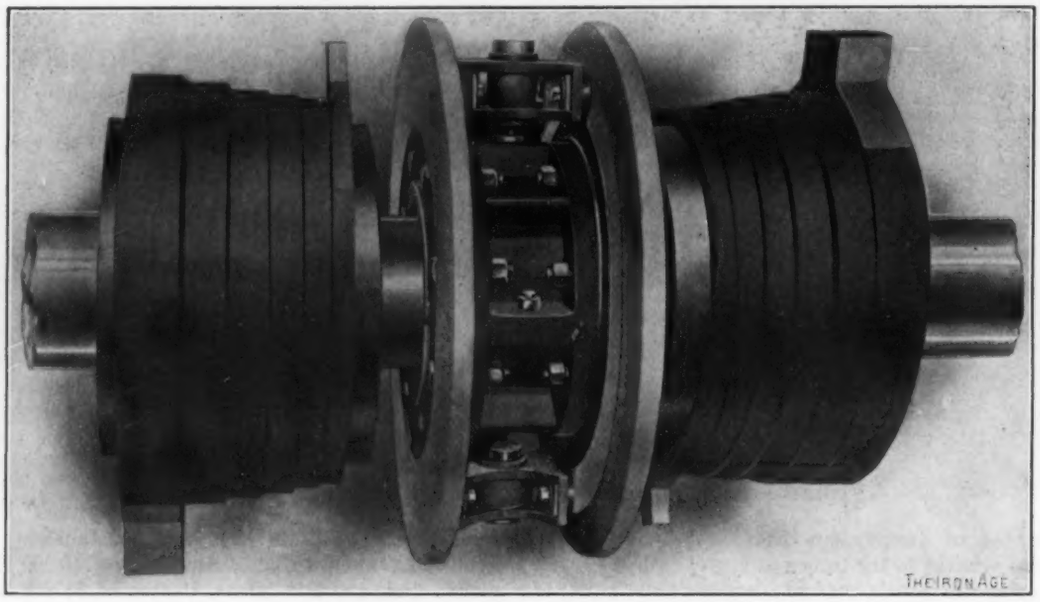

Fig. 1.—A 1000 Horse-Power Coil Clutch Used in a French Copper Rolling Mill.

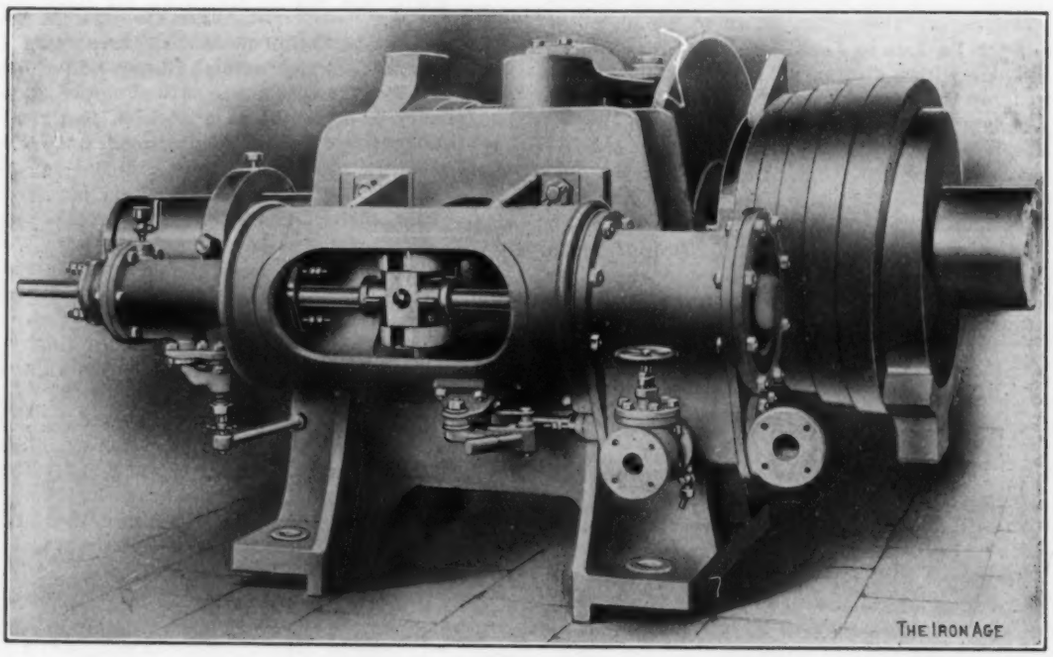

Fig. 2.—Steam Starting Gears for Operating the Clutch.

drum, the shaft commencing to revolve with the wheel. The steam reversing gear, Fig. 2, has a steam cylinder 11½ inches in diameter by 10 inches stroke. A valve is arranged beneath operated by rods from a hand lever which controls the admission of the steam to the cylinder.

Fig. 3 shows a plan of the reversing gear and its connection to an 800 horse-power steam engine which operates at 80 revolutions per minute and has a fly wheel weighing about 46 tons. The coupled continuation of the engine shaft has a spur gear with 27 teeth meshing with a 54-tooth gear on the clutch shaft and a 28-tooth gear on the back shaft, while on the other end of the back shaft a 45-tooth spur gear meshes with a 90-tooth gear on the clutch shaft. All of these gears have a pitch of about 5 inches. It will be noticed that the two spur

It is stated that by this special reversing arrangement many of the older rolling mills have been practically transformed and brought up to modern requirements, availing them of all the advantages of a heavy fly wheel on a continuously running engine.

Fig. 4 shows a reversing clutch as arranged for the propeller shaft of a motor boat driven by a 30 horse-power

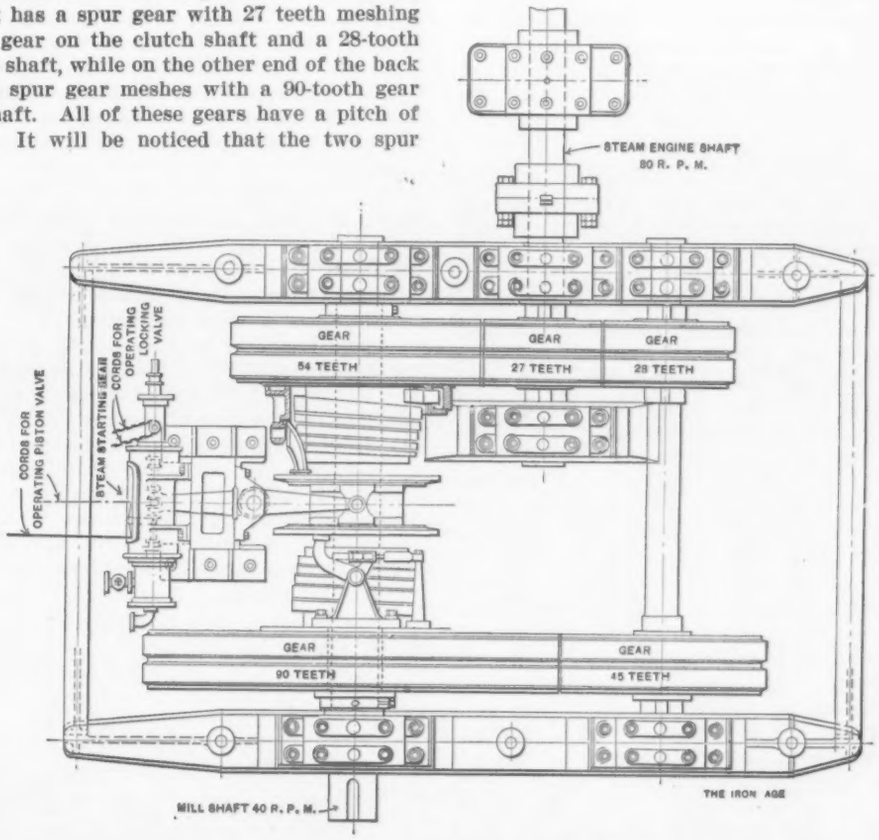

Fig. 3.—Plan of the Coil Clutch Reversing Gear in the French Copper Rolling Mill.

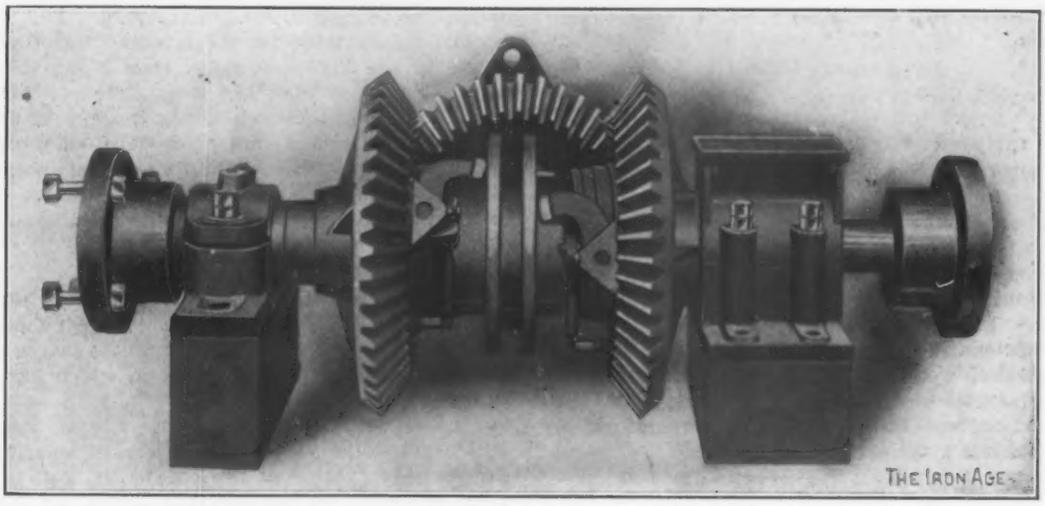

Fig. 4.—A Coil Clutch Reversing Gear for a Motor Boat.

gears on the clutch shaft are arranged to run at about 40 revolutions per minute in opposite directions. By means of one or the other of the two coil clutches either of these may be engaged at will with the shaft. The thick end of each coil has a lug formed on it resting in a pocket at the side of one of the spur gears, while the other end is connected to the short arm of a bell crank lever on the same gear. When the flanged collar is moved in either direction it comes into contact with the bell crank lever of the corresponding coil and the last turn of the coil is tightened on its drum so that the entire clutch grips with great power.

Diesel oil engine. A chilled friction drum is provided which is common to both coils, this drum being keyed to the engine shaft and measuring 7½ inches in diameter. The coils are fixed to the clutch bevel gears, the intermediate gear being merely an idler for reversing the direction of rotation of the second bevel gear. The clutch gear for going ahead is keyed upon the propeller shaft and that for going astern runs loosely on the engine shaft. When going ahead the drive is therefore direct from one shaft to the other through the forward clutch, the wheels being free, and when going astern the drive is through the wheels and the backward clutch. A hand wheel and

a screw gear worked by a lever puts either clutch in gear as desired, the lever engaging the sliding collar between the coils.

The Federal Bankruptcy Law.

WASHINGTON, D. C., December 4, 1905.—The annual report on the operation of the Federal bankruptcy law for the year ending September 30, 1905, has been prepared for the Attorney-General by E. C. Brandenburg, the bankruptcy expert of the Department of Justice. It not only demonstrates the increased efficiency of the statute as amended by Congress, but also reflects the generally prosperous condition of the entire country.

Voluntary Cases.

The reports from the clerks of the courts of bankruptcy show that the grand total of voluntary proceedings instituted during the year was 13,852. The total number filed during the year is 70 more than for the year ending September 30, 1904, but is about 450 less than the number of proceedings instituted during the year 1903, 2500 less than for the year 1902, and about 6000 less than for the years 1899 and 1900. As was anticipated in the earlier reports submitted to Congress, each year since the enactment of the law there has been a gradual decrease in the number of voluntary petitions filed. This may no doubt be largely attributed to the fact that during the earlier years of the operation of the law many insolvents of years' standing took advantage of the Federal statute who had already obtained a discharge under the State insolvent laws, but who desired a discharge which would be operative as a release to past obligations throughout the confines of the United States. It may be safely said that the number of petitions annually filed is now about normal, and is only likely to be increased in the event of some financial depression. During the year 10,995 voluntary cases were closed, in 6515 of which the total assets realized amounted to $8,045,326, and the liabilities aggregated $102,184,567. In the remaining 4480 cases no assets were realized.

The referees' reports show that of the cases closed 820 of the petitioners were farmers, 5426 wage earners, 3505 merchants, 328 manufacturers, 136 were persons engaged in some profession, and 780 were contractors, real estate men and persons engaged in various other occupations.

Involuntary Cases.

During 1905, says the report, 3094 petitions were filed to have insolvents adjudged involuntary bankrupts, but of these 410 were dismissed, either because the court had no jurisdiction or because no act of bankruptcy had been committed. The number of proceedings instituted the past year is about 200 less than for the year 1904. The number of involuntary cases closed was 1708, in which the liabilities were scheduled at $49,724,250, while the net assets realized therefrom amounted to $9,582,492. Of the other cases closed, 267 disclosed no assets, while in 249 the assets were less than $500.

Of those who were adjudged involuntary bankrupts, 7 were professional men, 174 manufacturers, 1066 merchants, and the remainder persons and corporations engaged in various kinds of business.

Practical Operation of the Law.

With regard to the practical operation of the law Mr. Brandenburg says: The practical operation of the law as originally enacted soon developed imperfections which were neither foreseen nor could have been anticipated. By the amendatory act of February 5, 1903, Congress eliminated those objectionable features and made more difficult the discharge of the dishonest insolvent. The amendatory act has now been in force sufficiently long to demonstrate its propriety and to reduce to a minimum the objections of the law.

It may not be amiss to reiterate the suggestion that upon the creditors lies the responsibility largely for the proper administration of the law. The filing of proofs of claim direct with the referee in a distant city, relying upon the possibility that some other creditor will be less shortsighted and will be represented either personally, by agent or attorney, before the referee and court is most dangerous and jeopardizes the interests of all creditors.

One of the most important provisions of the law is that guaranteeing to all creditors either personally, by agent or attorney, the right to cross-examine and investigate the affairs of the bankrupt, to the end that his assets may all be applied to their equitable distribution among his creditors. It is false economy therefore to file such claims direct, relying upon the referee to make investigations. The referee is in effect a judge of the court with certain limited jurisdiction, though almost the equal in bankruptcy matters to that of the Federal Judge holding the Court of Bankruptcy. It is neither his province nor his duty to act the part of counsel for trustee or creditor.

The outlying possessions—namely, Hawaii, Porto Rico and Alaska, like the older States of the Union—have been quick to appreciate the advantages guaranteed by the Federal law relating to insolvents, and show the institution of proceedings, both voluntary and involuntary, in the courts of these territories.

There seems to be no necessity at the present time for any amendment of the law as now enforced. The law as modified by the amendatory act appears to be meeting the demands of the commercial community and business has adjusted itself to the prevailing conditions, while credits are extended with this statute in mind..

Should Congress in its wisdom, however, deem it advisable to amend the law, then provision should be made authorizing corporations to become voluntarily bankrupt. No good reason at the present time seems to exist for limiting this right to involuntary proceedings against corporations. As now enforced, while they may not become voluntarily bankrupt they may in effect by indirection become so by admitting in writing their inability to pay their debts and expressing their willingness to be adjudged bankrupts on that ground.

The fact that of the cases closed but 3505 were of merchants and 328 manufacturers is a strong indication of the financial prosperity now prevailing throughout the United States. W. L. C.

Improvements at N. & G. Taylor Company's Cumberland Works.—The N. & G. Taylor Company, Philadelphia, is putting in additional equipment at its Cumberland rolling mills for the manufacture of soft steel billets in the lighter sections, from 1½ to 3½ inches square. This addition has been made possible by recent increases in the steel making capacity of the plant. Further improvements are planned to enlarge the output of sheet and tin bars for its own requirements and billets for the trade. The improvements are expected to be in operation by the end of the year.

The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., is doing a large business in equipping mines with electric locomotives. A contract has just been closed with the Newport Mining Company, which has decided to equip its mines at Ironton, Mich., with both surface and underground electric haulage. Electric locomotives will be used the year round in the various levels underground for bringing the ore to the bottom of the shaft, and after the transportation season has closed such locomotives will be used on the surface for hauling ore from the top of the shaft to the various stock piles for storage. For these purposes six 4-ton Westinghouse mine locomotives have been ordered, together with the electrical apparatus for the equipment of the necessary power station.

At the Montreal water works a high-lift turbine pump has been installed, operated by an electric motor, which uses current at 2200 volts and 63 cycles per second. The pump is designed to raise 3800 gallons of water per minute against a total head of 300 feet, requiring the expenditure of 450 net horse-power. The set which runs at 740 revolutions per minute has an efficiency of 78 per cent.

The Allis-Chalmers Steam Turbine.

The recent starting up of a steam turbine at the Washington street power house of the Utica Gas & Electric Company, Utica, N. Y., calls attention to the fact that this is the first turbine to be put into operation by the Allis-Chalmers Company, which has recently entered the steam turbine field. The turbine outfit installed at Utica is shown by the accompanying Fig. 1.

This turbine is rated at 1500 kw., normal load, and runs at a speed of 1800 revolutions per minute. It is direct coupled to an Allis-Chalmers two-phase, 60-cycle revolving field alternator, operating at 2500 volts. The unit has a continuous overload capacity of 25 per cent., with a three-hour 50 per cent. overload capacity without exceeding a safe generator temperature, and capable of a 100 per cent. safe momentary overload. Artificial ventilation by means of an electrically driven fan blower will, however, enables the unit to be run safely beyond its rated overload capacity.

The turbine follows the well-known Parsons type, which has proved eminently successful in numerous installations both here and abroad. The Allis-Chalmers construction, however, embodies a number of features which are new in this country and which are claimed by the builders to be distinct improvements.

The chief distinguishing feature of this construction is the blading, which, while it is of the Parsons reaction type in its principle of operation, differs in mechanical construction in a number of essential details. The roots of the blades are formed in dovetail shape by special machinery and are inserted in slots cut in foundation or base rings, these slots being formed by special machine tools in such a way as to exactly conform to the shapes of the blade roots. The foundation rings themselves are of dovetail shape in cross section and are inserted in dovetailed grooves cut in the turbine cylinder and spindle respectively, in which they are firmly held by key pieces, much in the same way that the well-known Lewis bolt is fastened. In order to further insure the integrity of the construction the key pieces or rings after being driven into place are upset into undercut grooves.

Another noticeable feature of the blading is the method of reinforcing and protecting the tips of the blades. This point in steam turbine design is one upon which much thought has been expended by various inventors, and the Allis-Chalmers Company claims that the construction employed by it successfully solves all difficulties. In forming the blades a shoulder projection is left at the tip. This is inserted in a slot punched in a shroud ring, the slots being punched by special machinery in such a way as to produce accurate spacing and at the same time form the slots so that they will give the proper angle to the blades independent of the slots in the base ring. After the blade tips are inserted in the slots in the shroud rings they are riveted over by specially arranged pneumatic machinery.

The shroud rings are made in channel shape, with outwardly projecting flanges, which, after being assembled in the turbines, are turned and bored to give the necessary working clearance. The flanges of the channels are made so thin that, although amply sufficient for stiffness, the shroud ring does not have the disadvantage of a solid shroud, which acquires a dangerous temperature by friction in case of an accidental contact of the rotating and stationary parts. It is claimed for this construction that the blades are stiffened against the effect of vibration in a much more substantial manner than by any other means thus far employed while the use of a protecting shroud ring enables the working clearance to be made smaller than in the case of naked blade tips, without danger in case of accidental contact, thus reducing the leakage loss to a minimum, the leakage past the blade tips being the principal source of loss in the steam turbine. The immunity from damage in case of accidental contact it is claimed has been demonstrated by experiment with actual blading by throwing the bearings out of center so as to produce contact without detrimental results. An incidental advantage of this construction is that if a blade should prove defective it is so held in place by the shroud ring that it cannot possibly work loose and cause damage.

By the method of construction described, the entire blading is produced by machinery, thus eliminating the personal equation which enters into blading done by hand, which depends upon the skill of the individual workmen. Besides insuring that every blade is securely fastened all blades are necessarily set at exactly the designed angle and pitch, the openings between blades, upon which in great part the economical performance depends, being absolutely uniform. The blading is made up in half rings in the blading shop and is carefully inspected before being inserted in the turbine.

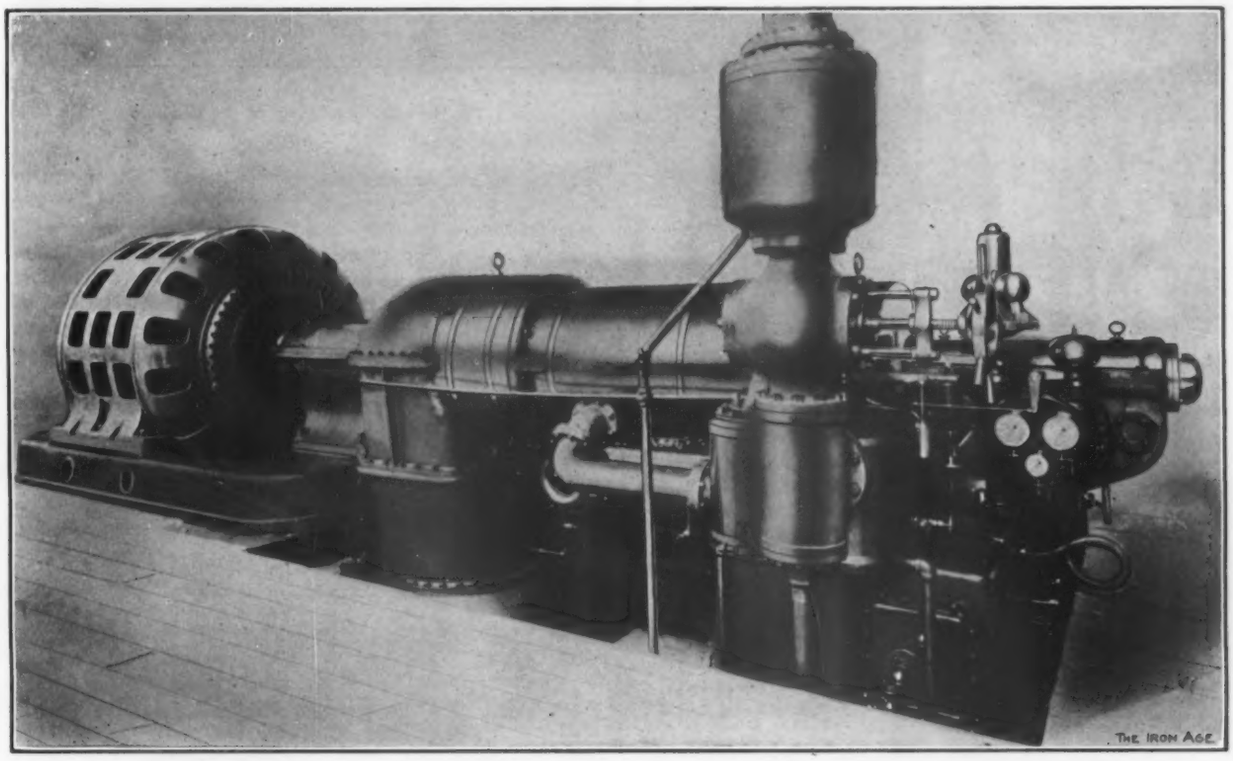

Fig. 1.—The 1500-kw. Allis-Chalmers Turbo-Generator, Installed in the Utica Gas & Electric Company's Station.

Fig. 2, which was photographed from a drawing, shows the general scheme of the blading, illustrating the method of fastening the blades as well as the channel shaped shroud rings. Fig. 3 shows two half rings of blades ready for assembling in a turbine; these half rings being respectively the smallest and largest ones used in a turbine of the size installed at Utica. Fig. 4 is from a photograph of blading, showing the substantiability of the construction as well as the uniformity of the work. Fig. 5 shows a turbine rotor of the same size as that of the Utica turbine, this photograph having been taken in the West Allis shops of the Allis-Chalmers Company.

Another special feature of this turbine will be noticed by referring to Fig. 5—*i. e.*, the absence of the usual low pressure balance piston—the photograph showing only two balance pistons instead of the three pistons formerly used in this type of turbine, where it is said to have been found difficult to produce a balance piston of the size required for balancing the low pressure stage of the turbine and at the same time make it sufficiently rigid to run with the necessary small working clearance. In the Allis-Chalmers construction there is, however, a third balance piston, but instead of being at the high pressure end of the turbine, as formerly arranged, it is at the low pressure end, and as it is smaller than the large end of the spindle it is hidden from sight in the photograph. By making this piston in such a way that its circular area is equal to the annular area of the pistons used in the older construction the low pressure balance piston is made much smaller. Instead of reducing the leakage past this piston by means of dummy packing, as in the high pressure and intermediate pistons, and as used in the low pressure pistons of the older construction, a labyrinth packing of radial baffling type has been adopted, thus eliminating small axial clearance in this turbine. A considerable advantage is claimed for this construction in permitting the use of smaller working clearances in the high pressure and intermediate balance pistons.

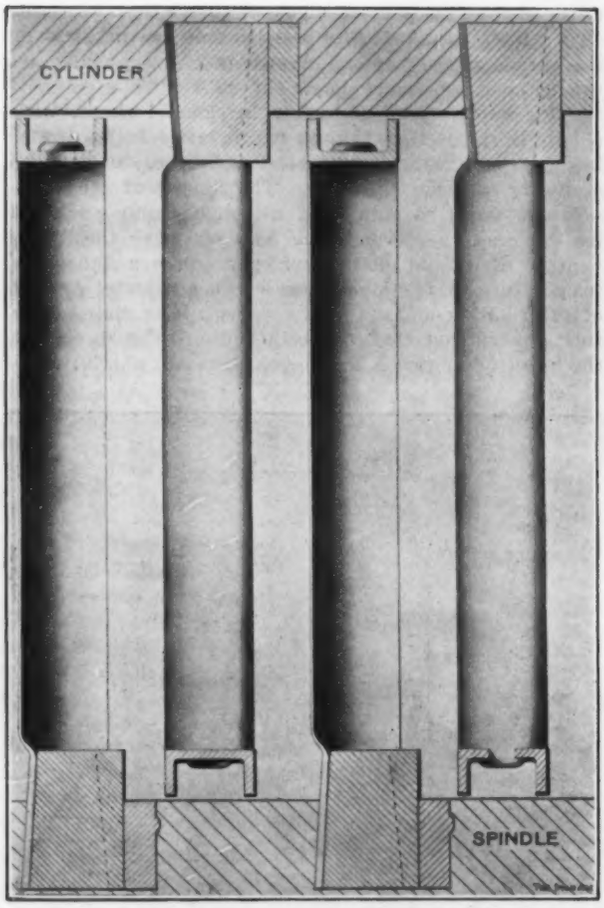

Fig. 2.—Detail Showing the Blade Fastening.

Fig. 4.—Another Detail of the Blading.

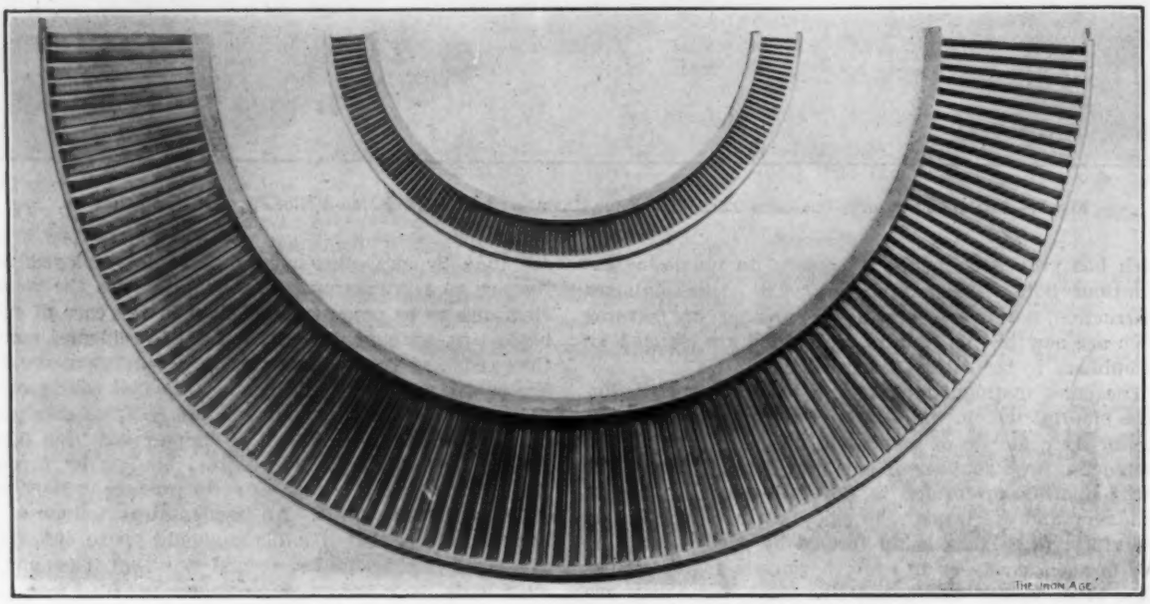

Fig. 3.—One of the Largest and One of the Smallest Half Rings of Blades.

There are a number of other points of improvement which will not permit of description within the space of the present article. These include details of rotor

construction, governing mechanism, lubrication and other minor features.

The alternating current generator of the Utica outfit also is deserving of more description than the present article will allow. Perhaps the most noticeable feature of this generator is the substantial design of the revolving field, Fig. 6, providing great strength and at the same time giving the thorough ventilation which is essential. Particular attention has been paid to the insulation, as may be inferred from the fact that the armature was subjected to an alternating current insulation test of 10,000 volts for the period of 15 minutes. This generator

by giving to the Allis-Chalmers Company the benefit of the vast experience of Mr. Parsons, the original inventor of this type of turbine, and to whose engineering ability and indomitable energy the evolution and present state of perfection of the successful steam turbine are principally due. The company has also secured rights under Mr. Parsons' patents for marine turbines and turbo-compressors and blowers, for which there is a growing demand.

At present the Allis-Chalmers Company is building steam turbines in its engine works at West Allis. The growth of the business, however, has led to a large ex-

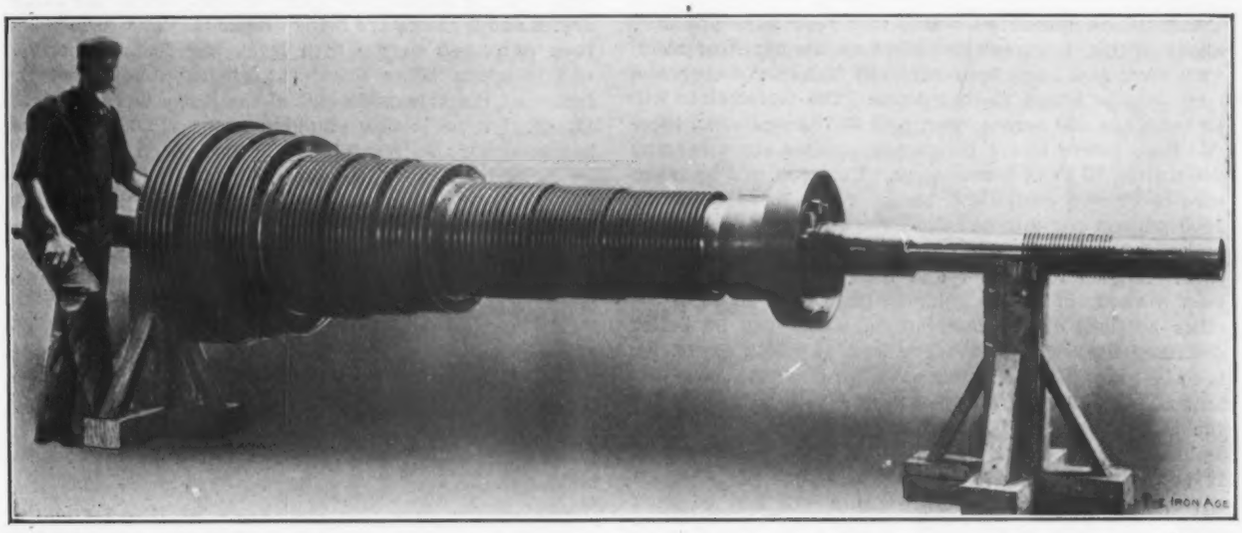

Fig. 5.—The Rotor Removed from the Turbine.

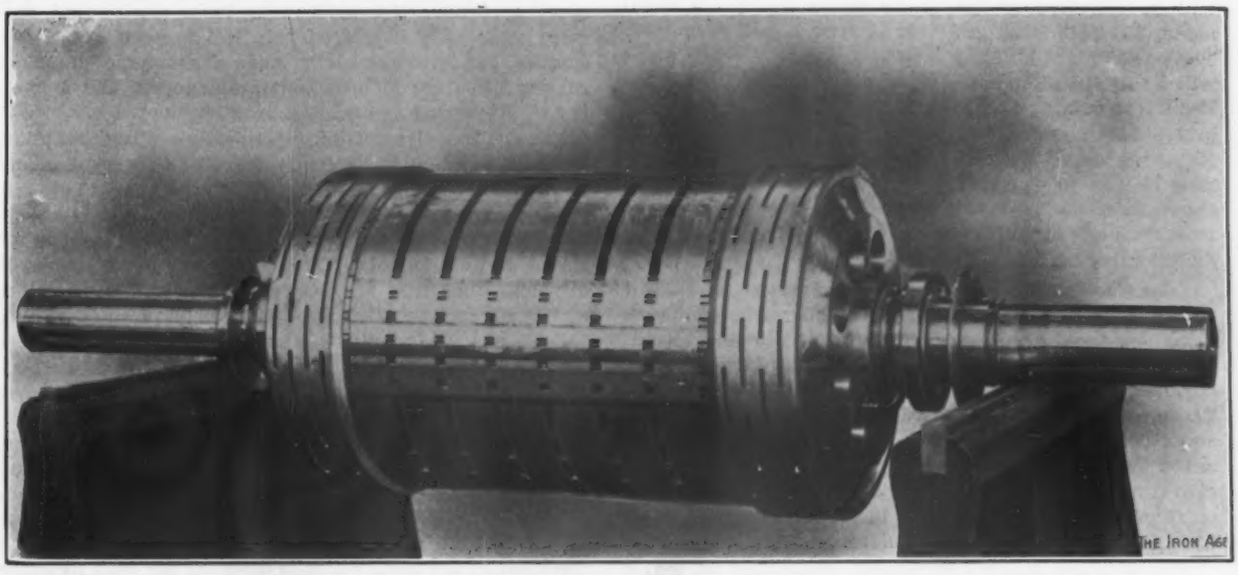

Fig. 6.—The Revolving Field of the Alternating Current Generator.

was built at the Bullock works of the Allis-Chalmers Company at Cincinnati.

The Allis-Chalmers Company, in entering the steam turbine field, effected an alliance with the Turbine Advisory Syndicate of England, thereby securing the co-operation of the firms therein interested, including Willans & Robinson, the famous high speed engine builders of Rugby; Yarrow & Co., the well known torpedo boat builders of the Isle of Dogs, London, and the Neptune Shipbuilding Works, Walker-on-Tyne. The Utica turbine, in fact, was built for the Allis-Chalmers Company by Willans & Robinson, to whom a number of turbine contracts were sublet by the Allis-Chalmers Company before the latter had perfected the installation of its special machinery for turbine manufacture. An agreement has more recently been effected with Hon. Charles A. Parsons, C.B., for interchange of data, there-

tension of the works, amounting to a practical doubling of the present plant. A considerable part of the extension will be devoted to the manufacture of steam turbines and the accompanying electric generators, one of the three new manufacturing buildings being given up to the exclusive manufacture of the turbines themselves. The first steam turbine of the company's own make, having a capacity of 5500 kw., has recently been shipped and others are following as fast as the present crowded condition of the shops will permit.

The United States battleship Idaho was launched December 9, at the yards of the William Cramp Ship & Engine Building Company, Philadelphia, Pa. The Idaho is a sister ship of the Mississippi, and is of 13,000 tons displacement.

Important Mining Company Contracts.

DULUTH, Minn., December 9, 1905.—Some important contracts in connection with the iron ore trade have just been closed in this city. The Penn Iron Mining Company, operating mines on the Menominee range, has contracted with the General Electric Company, through R. A. Swain, its Duluth representative, for a complete hydro-electric plant. The first contract is for apparatus that will furnish 2000 horse-power, later to be followed by an additional capacity of 2000 horse-power. The current used will be for the purpose of operating hoists, compressors and pumps at East Vulcan, West Vulcan and Curry mines, properties which this year have produced about 450,000 tons, are developed to the depth of about 1200 feet, and have been explored 300 feet deeper and may soon be mined to that depth. The motor sizes will embrace one 450 horse-power, four 300 horse-power, three 200 horse-power and a number of smaller sizes, ranging down from 75 to 15 horse-power. Pumping will be taken care of by two centrifugal pumping sets of capacity for 1800 gallons per minute; the pumps are to be six-stage and will be directly connected to 550 horse-power motors each. A good many new and interesting features have been worked out in this pumping plant, as well as in the other portions of the installation, which can be better described later than now. The dam at which electricity is to be generated is located six miles from the more distant mines, and the transmission lines will be erected for the total capacity of 4000 horse-power at 13,200 volts, 3-phase current. The dam is now under construction. It is to be of concrete across the mouth of Sturgeon River, where its banks come within 175 feet of each other. The dam is anchored in the rock of the river bed and no artificial anchorages were found necessary. The dam will be 31 feet thick and will run straight across the river and will give a head of 22 feet. Water will be delivered to the power house through a canal about 250 feet long, and this is now about completed. The power plant building is also under way. The plant will be in operation some time in the fall of 1906. The Penn Iron Mining Company is the property of the Cambria Steel Company, and all its ores but those from the Mahoning mine, Mesaba range, come from these mines. This change to electricity will mean an expenditure of about $250,000 and will give the Penn company the most complete and up to date electrical plant in the Lake Superior region.

The Cambria Steel Company has just let in Duluth to the American Shipbuilding Company, whose officers were here for the purpose, a contract for two steel steamships, each 600 feet long over all, to be fitted with quadruple expansion engines and to cost about $500,000 each. These will carry during an ordinary season of navigation about 500,000 tons, while the Cambria Company's Penn mines and its proportion of Mahoning mine's production give it annually about 1,000,000 tons. This is the initial entry of the Cambria Company in ore transportation and is certainly a sound and wise move.

On the same day the Pittsburgh Steamship Company (United States Steel Corporation) gave the American Shipbuilding Company a duplicate contract. This company already has two 600-foot ships under contract by the American Company. These ships are 32 feet longer than the longest on the lakes and will carry on ordinary draft about 12,000 gross tons of ore. In this contract the Pittsburgh Steamship Company is making up for a part of the losses it has recently met and is carrying out its policy of increasing its fleet by the addition yearly of two to four of the largest ships on the lakes. The Cleveland Cliffs Iron Company also gave contracts for two 10,000-gross-ton steel ships of extra power and very stanch build.

As wrecking operations proceed upon ships of the Pittsburgh Company ashore on Lake Superior the condition of the vessels is seen to be worse than was anticipated. Two or three of the ships that were least damaged have been floated, others are found more broken than supposed, and the splendid Corey is in considerable danger of becoming a total loss.

Mining Developments.

Considerable important development is under way on the west end of the Gogebic range, where several shafts are going down to about 2000 feet. Among those heavily interested are the Hayes Brothers, fee owners of the Ashland mine, and the Cleveland Cliffs Iron Company. The former have the old Germania, which is now named Harmony, and they are sinking a shaft that is now down 1400 feet. They have reached excellent ore, but are going on to their intended depth. The old Iron Belt, now under development for the Cleveland Cliffs Company, is reaching for great depth, and 65 men are engaged in shaft sinking. It had been developed to 900 feet. At the Atlantic, also on the west end of the range, Nos. 2 and 3 shafts are being deepened. The former had been developed to the fifth level, 950 feet. Other old w.rkings are being driven at greater depth and the future of the Wisconsin end of the range is very bright. Montreal mine is now shipping about 175,000 tons and has been very successful. It is also to go deeper in a short time. East of the Norrie group the Oliver Company is sinking a deep shaft in the foot wall at the old Davis to reach ore found on its lands north and at great depths. This will be a large and well equipped steel shaft, on the plan of the Oliver Company's new work.

Among the new mines that will be shippers off the Mesaba range next year are Baltic, which is being developed close to the old Pettit by the Hobart Ore Company; Waucouta, a mile or so east of Mountain Iron, which was bought some years ago by the Pitt Iron Company, and is to be stripped this winter for extensive mining in the spring; Bangor and Syracuse of Pickands, Mather & Co., lying east of Biwabik, both of which are being developed for underground work; St. Paul, which Corrigan, McKinney & Co. are opening west of Stevenson; the Canisteo and Holman groups, on the new part of the range, and an unnamed property east of Mesaba station. In addition to these are several that were sufficiently developed this fall to send out a few cargoes, but have not really made any notable shipment. Among these are Monroe-Tener, Alexandria and a number of others.

The Oliver Iron Mining Company's Riverton mine, Menominee range, has recently opened into what seems to be a good, fine body of its standard grade ore. This discovery was by drill at depth and little is actually known as to the extent of the deposit, but its indications are for a considerable tonnage. This is but one of a number of excellent finds that are now being reported from points on the Menominee range by various explorers and mining companies. The Saginaw and Caspian discoveries are others, and all indicate that the Menominee is to play the highly important part in increasing tonnage that has been predicted in this correspondence for some years.

The men who direct operations for the Oliver Iron Mining Company on the Marquette range have formed the Oliver Club and held their initial meeting at Ishpeming a week ago. W. H. Johnston, who is superintendent of the company's operations in the district, is president of the club, which is designed for both pleasure and education. It has more than 100 members. At the first meeting the club had as guests T. F. Cole, president of the Oliver Iron Mining Company, and W. J. Olcott, its general manager.

Figures of shipments from many mines of the lake region have been secured already and might be printed this week, but the list must be quite incomplete for a week yet. The total will foot up to about 33,300,000 gross tons. To this must be added the total from the Canadian side of Lake Superior, the shipment of the Lake Superior Corporation's Helen at Michipicoten, which for the year has been 169,527 gross tons. Of this Hamilton Furnace Company received 65,261 and Lake Erie ports 104,266 tons. This makes the total Helen shipments from the beginning 1,078,633 gross tons, more than many people supposed the mine contained. D. E. W.

The Pennsylvania Railroad Company moved 185,000 freight cars over its main line in November, establishing a new record. Of these cars 111,940 were loaded.

A Curious Rock Formation.

The accompanying illustration is a reproduction of a photograph of the upper edge of a mine known as 21 Mine, operated by the Port Henry Iron Ore Company, adjoining the premises of Witherbee, Sherman & Co., Incorporated, at Mineville, N. Y. A careful scrutiny of the illustration will disclose that a part of the wall under the trolley hoister has a beautiful rock formation in the shape of an ancient Greek head. It will be necessary to turn the picture on its side to see the head. This is a natural formation and it is a curious fact that the picture can only be obtained under certain conditions. It must be taken when the sun shines on it from one certain direction, and besides this the other points in the

A Curious Rock Formation.

vicinity must be slightly underfocused. The photograph was taken by Edward Van Stoane, Mineville, representative of Andrew S. McCreath & Son, Harrisburg, Pa.

The Southern Steel Company.

Important developments are foreshadowed in the announcement this week of the merging of two Southern iron properties and the entrance into the directorate of the new company of R. B. Van Cortlandt and Moses Taylor of the banking firm of Kean, Van Cortlandt & Co., New York, both of whom are identified with the Lackawanna Steel Company, Buffalo, N. Y., and the Sloss-Sheffield Steel & Iron Company, Birmingham, Ala. The new company, which has been incorporated as the Southern Steel Company, with a capital stock of $16,000,000, of which $6,000,000 is preferred and $10,000,000 common stock, has taken over the Alabama Steel & Wire Company, Birmingham, with works at Ensley and Gadsden, Ala., and the Underwood Coal Company, Birmingham, which operates large iron ore and coal properties in that district. The former company has been controlled by the Schuler family, the members of which have been factors in the steel and wire trade for many years.

The new company intends to develop the properties acquired on an extensive scale, the funds for which will be supplied by Messrs. Van Cortlandt and Taylor, to be raised probably by an issue of bonds. At the present time the ore and coal properties are being developed so as to be in condition to supply the necessary raw material for the proposed improvements and enlargements to the iron and steel plants. The principal work of extending the business will be an increase in the production of steel and wire by the former works of the Alabama Steel & Wire Company. For the past four or five years this company has been gradually expanding and now the improvements it had in contemplation will be carried out by the new company. While plans for all the extensions have not been formulated, those for part of the work have been decided upon. The first field of production to be enlarged will be the open hearth steel department at the Gadsden works. This department, which contains four 50-gross-ton basic open hearth steel furnaces, is to be increased 50 per cent. by the installation of additional furnaces. The wire plant is also to be materially enlarged, the details of which are not yet available. Later another blast furnace will be erected, but it will probably be some time before work of construction shall be started. It is a totally distinct enterprise and does not indicate a possible merger with the Sloss-Sheffield Company. The officers and directors of the company are: Everett T. Schuler, president, Gadsden; George H. Schuler, vice-president and treasurer, Birmingham; R. D. Carver, secretary, Birmingham; Harrison B. Schuler of Saratoga, Fla.; John Bindley of Pittsburgh, C. Van Camp of Indianapolis, Moses Taylor and Robert B. Van Cortlandt, New York.

The Immense Freight Tonnage of Pittsburgh.

The Pittsburgh *Gazette* recently contained an interesting article relative to the freight tonnage of the Pittsburgh district, from which we take the following:

An increase of 127.3 per cent. in the tonnage of Pittsburgh in eight years seems almost unbelievable, but conservative railroad men and others in touch with the great traffic movement of this year are feeling pretty certain that the tonnage will be near the 100,000,000 mark. In 1897, according to statistics compiled by the Chamber of Commerce of Pittsburgh, the tonnage was 43,997,718 for the railroads and rivers.

All of the coal and ore handling roads have hauled more of these products in the past two months than in any similar period in local transportation history. The finished product tonnage from the Pittsburgh steel mills will be far ahead of any previous year.

At the request of a number of railroad officers the *Gazette* gives the following Chamber of Commerce statistics for the past eight years, the tonnage for last year being estimated in round figures:

	Railroads.	Rivers.	Total.—Tons.
1897	36,679,415	7,318,366	43,997,718
1898	39,387,925	7,487,243	46,875,168
1899	49,475,211	9,181,486	58,656,697
1900	57,005,465	8,813,166	65,868,631
1901	64,125,000	9,000,000	73,125,000
1902	76,950,000	11,000,000	87,950,000
1903	79,750,000	10,000,000	89,750,000
1904	77,750,000	10,000,000	87,850,000

For the present year to the close of October the Bessemer & Lake Erie Railroad's tonnage was greater than for all of last year, thus giving two months of excess toward the 100,000,000 mark. The other local roads have had like increases in ore and coal tonnage this year and the movement is continuing to increase daily.

The Jones & Laughlin Steel Company, Pittsburgh, is preparing an exhibit of structural steel for a permanent display in the exhibit hall of the Builders' Exchange in the Heeren Building, in that city. The display consists of a miniature steel frame of a two-story building about 15 feet high, and into this frame have been placed all the types of steel columns, floor beams, roof trusses, steel reinforcements for concrete walls and various portions of steel framework that enter into modern building.

The Board of Estimate and Apportionment, New York, has approved the scheme for the Hendrik Hudson Memorial Bridge at Spuyten Duyvil, and has appropriated $1,000,000 for the preliminary work. The estimated cost of the bridge is $2,025,000. The plans have been referred to the chief engineer and the borough presidents of Manhattan and the Bronx.

In November the hoop mills at the Monessen Works of the Carnegie Steel Company, Monessen, Pa., turned out 2588 gross tons. The 10-inch mill made 3328 tons and the 8-inch mill 1260 tons, beating the best previous record of this plant in output of hoops about 500 tons.

Current Developments in Canada.

Western Tariff Views.

TORONTO, December 9, 1905.—On its return to the Canadian Northwest the Tariff Commission found the farmers much more interested than they showed themselves to be in September. At that time it was impossible to leave their harvest fields to lay their views on the tariff before Mr. Fielding and his associates. Those views have now been strongly stated by deputations heard by the commissioners at Winnipeg, and will doubtless be pressed home by deputations that will present themselves at other points. They call for the lowering or removal of the duty on implements, cement and other staple manufactured products. They protest against the proposal for a duty on lumber. Opposed to these representations are those of manufacturers in the country. The vice-president of the Canadian Manufacturers' Association addressed the commissioners, the following being among the points of his statement:

We believe that the people of the Canadian West should do their own manufacturing so far as possible, but when we cannot get what we want right here at home we think that our fellow Canadians in eastern Canada, who are helping us in building up and developing the West, should get a preference over all outsiders. If we cannot get what we want either in the Canadian West or in eastern Canada we should then seek what we want in Britain in preference to foreign countries.

We do not pretend to advise the commission how high the tariff should be, but it should be high enough to cause many of the great manufacturing companies of the United States, who are now selling large quantities of goods in Canada, to establish branch factories in this country. If the Government will do this much we think the cities and towns of the Canadian West will be able to convince American capitalists that a good many of the branch factories should be located west of Lake Superior.

T. R. Deacon appeared to protest against any lowering of the duties on boilers and machinery. He said that the manufacturers of Canada had but an infinitesimal portion of the boiler and machinery trade of the West, whose wants in these respects were almost wholly supplied by United States manufacturers. The manufacturers of St. Paul and Minneapolis had the advantage of favorable freight rates on their material, as they have to pay only 29 cents per 100 pounds from Pittsburgh to Minneapolis, a distance of 1500 miles, as against a rate of 71 cents from Pittsburgh to Winnipeg, which is only 450 miles further.

Anti-Dumping Duties.

J. H. Ashdown of the J. H. Ashdown Hardware Company, Winnipeg, laid before the commission his views on the anti-dumping clause. He said in part:

So far as known no question of dumping ever arises unless the product is controlled by a combination or monopoly in the United States. The price to the Canadian trade before the enforcement of the so-called dumping clause was the same as to other foreign trade and was in no case that we know of less than a fair value. The operation of the dumping clause as a rule injures the consumer and benefits no one except it be the American manufacturer, who generally raises his price accordingly. While these clauses are on occasion extremely unjust as well as annoying in their operation to the importer, after inquiry we know of no case in which they have benefited the manufacturer by preventing importation.

Punished for Combining.

Justice Clute, before whom action was taken in this city against certain parties accused of conspiracy in connection with the plumbing business, has found the Master Plumbers' and Steam Fitters' and the Central Supply Associations both guilty, and has sentenced each of the organizations to pay a fine of $5000. To combine in restraint of trade, as the two associations were found guilty of doing, is a violation of section 520 of the Criminal Code of Canada. The judge also declared guilty eight individual members of the Master Plumbers' and Steam Fitters' Association and imposed on all but one, upon whom sentence was suspended, fines varying from $250 to $500. This, however, does not close the proceedings which have been begun, there being about 120 persons involved one way or another whose cases are pending.

It is expected that Justice Clute's severity will have a disintegrating effect upon many associations existing in this country, especially upon those for whom Jenkins & Hardy of this city were acting. As is already known to readers of *The Iron Age*, the books of these associations are in the possession of the crown attorney, who pressed the case against the plumbers' organizations.

Mr. Hardy was in Montreal this week, his presence there being referred to by the Montreal *Herald* of yesterday as follows:

James Hardy, the creator of the Wholesale Hardware Association and the principal promulgator of the agreements between manufacturers and firms engaged in the hardware trade, has been here for two days in conference with the leading wholesale men of this city and representatives of the trade in the Maritime Provinces.

Many of the heads of wholesale firms who have had the utmost faith in Mr. Hardy are far from pleased with the methods of procedure and with the character of the agreements revealed in the newspapers as the result of recent investigations, but it is considered improbable that the revelations will result in the breaking up of the Hardware Association.

It is no secret that several prominent wholesale men greatly dislike some of the provisions in the manufacturers' agreements, particularly the clause giving the big houses who sell larger quantities than the smaller firms a pronounced advantage in the matter of rebates, premiums and royalties.

It is said that part of the object Mr. Hardy had in view was the revival of the nail combine, but nothing has been done in this connection. Several of those interested regard the present as an inopportune time for action of that character.

Ontario's Mineral Field.

Returns received from the Ontario Bureau of Mines show that the output of the metalliferous mines and works of the Province in the nine months ending with September was as follows:

	Quantity.	Value.
Gold, ounces	3,585	$67,259
Silver, ounces	2,400,000	1,300,000
Nickel, tons	7,200	2,531,000
Copper, tons	3,390	522,746
Cobalt, tons	118	75,000
Iron ore, tons	167,045	157,640
Pig iron, tons	187,797	2,907,864
Steel, tons	101,176	2,421,549
Lead ore, tons	162	.....
Arsenic, tons	425	2,400

After due allowance is made for the conversion of pig iron into steel, the total value of the metalliferous minerals produced in the nine months in the Province is found to be about $9,000,000. For the whole of 1904 it was $5,061,677. The difference indicates that the current year's production will be more than double that of 1904. And it is to be noted that the value given is the selling price at the mines or works and not that of the refined metals.

Among the volatile features of the returns the figures of the nickel output are conspicuous. For the nine months they show a greater yield than was obtained in 1903, the year of previous maximum production. The Sudbury deposits are now turning out much the larger part of the world's nickel supply.

As a producer of silver Ontario is placed on a new footing by the developments in the Temiskaming district. British Columbia's place as the chief silver province in Canada is no longer secure. In 1904 its mines produced about 3,500,000 ounces of silver, whereas the production of silver in Ontario during the first three-quarters of the present year was 3,200,000 ounces. C. A. C. J

A Gasoline Motor Car's Good Performance.—The No. 16 gasoline motor car is a new addition to the line of cars adapted to run on railroad tracks built by Fairbanks, Morse & Co., Chicago. Early last summer one of these cars was used by George H. Webb, chief engineer of the Michigan Central Railroad, in making an inspection trip over the system. The following is interesting as showing what may be accomplished with these cars. The total distance traveled by the car was 4347 miles and the total amount of gasoline used was 231 gallons, or an average of 19.7 miles per gallon of gasoline. On one run a distance of 175 miles was made with 7½ gallons of gasoline, or 23.3 miles per gallon. The total cost per mile, including lubricating oil, battery cells and everything except the wages of the man in charge, was 0.9 cent. A distance of 66.4 miles was made in one hour and 40 minutes without stopping the engine and 39.6 miles were covered in 45 minutes, the rate being 52.94 miles per hour.

THE MECHANICAL ENGINEERS' CONVENTION.

The last issue contained an account of the opening of the fifty-second meeting of the American Society of Mechanical Engineers in New York City, Tuesday evening, December 5, and covered the proceedings up to and including Wednesday night. There was an omission from the report of the business session, held Wednesday morning on board of the steamship Amerika, which was the announcement of the newly elected officers. These are as follows:

President, Fred W. Taylor, Philadelphia, Pa.; vice-presidents, W. M. McFarland, Pittsburgh, Pa., E. N. Trump, Syracuse, N. Y., and R. C. McKinney, New York City; managers, Walter Laidlaw, Cincinnati, Ohio, F. G. Tallman, Cleveland, Ohio, and F. M. Prescott, Milwaukee, Wis.

THIRD SESSION.

Thursday morning at 10 o'clock the members convened in the auditorium of the Edison Building for a professional session. The greater part of the morning was devoted to the discussion of bearings, a number of short papers being presented on this subject. The first of these, submitted by George R. Henderson, New York City, specially referred to

Locomotive Bearings,

and gave briefly the limitations affecting their design. It is not feasible to make such bearings as long as might be desirable without producing eccentric loading. This causes uneven wear and gives rise to heating, therefore it is better to use a shorter bearing upon which the load is centrally applied, even though the unit load is greater. Nor can a remedy be looked for in the increasing of the diameter of the axle, as it is not advisable to make it larger than is actually needed. It augments the rubbing speed and ordinarily overcomes the benefit of reduced pressure, although the tendency to force out the lubricant is reduced.

Bearing Metals.

Prof. R. C. Carpenter, Cornell University, submitted a paper regarding methods of testing and qualities of bearing metals. This drew attention to the difficulties in testing bearing metals consequent upon the varying conditions with different methods of lubricating. The method which seemed most valuable for laboratory results was that of supplying a limited and known quantity of lubricant and noting the temperatures and coefficient of friction corresponding to the different pressures for a given travel of the surface of the journal. As there is no way of definitely applying a known quantity of lubricant to the face of the journal, these tests are often misleading. The coefficient of friction is generally a function of the lubricant rather than of the character of the bearing metal, although it is certainly affected by the quality of the metal in some degree. The following were pointed out as the desired qualities of a bearing metal, which should first of all be one "that has considerable adhesion for a lubricant and is readily wetted by it. It should also be softer than the shaft which it supports, so that in case of lack of lubrication, or in case hard, gritty material gets in the bearing, the bearing material would be injured rather than the journal. It should be hard enough, however, to retain its shape under any conditions of pressure or temperature which are likely to be imposed upon it by actual use. The bearing metal should have a melting temperature less than that of the journal which it supports, but it should at the same time be readily melted by changes in temperature which occur in practice. The bearing metal when melted should not possess the property of adhering or welding fast to the journal." The author gave it as his opinion that there is no single definition or specification which can adequately describe a bearing metal which shall be universally satisfactory for all work and conditions.

Tests of Large Shaft Bearings

was the subject of a discussion presented by Albert Kingsbury, Pittsburgh, Pa. This recounted tests made in the East Pittsburgh Works of the Westinghouse Electric & Mfg. Company, the apparatus being that intended for the Niagara Falls Hydraulic Power & Mfg. Company. The apparatus tested consisted of a horizontal shaft supported in two bearings, each 9 inches in diameter, 30 inches long, with a third bearing 15 inches in diameter, 40 inches long, midway between the supporting bearings. The latter were pressed upward against the shaft by a powerful weighted lever. The bearings were lined with genuine babbitt metal scraped to fit the shaft and were water cooled and flooded with oil. It was found possible to run the bearings with loads and speeds greatly exceeding the ordinary values in practice even without water cooling the bearing sleeve. In one case a run was made under 94,000 pounds load at 1243 revolutions per minute, with only a very small amount of water run through the bearing sleeve merely for determining its temperature. The oil supply was cooled. The power required to drive the shaft was very nearly proportional to the speed of rotation independently of all other conditions, such as load, final temperature obtained and lubricant used. This result is probably not a general law, but is noteworthy even as an accidental relation.

The fourth discussion, submitted by C. E. Naylor, Chicago, Ill., had for its subject

Water as a Lubricant for Machinery Bearings.

It described two jack shafts 5 inches in diameter, 18 feet long, each running at 280 revolutions per minute, driven by 175 horse-power engines and driving five electric generators. The bearing boxes were 14 inches long, split horizontally, the pull of the six belts being all in the same direction and against the split in the boxes, which were cast iron, babbitt filled. For two years trouble was experienced in keeping the boxes cool with oil and finally water was tried, with such good results that it was continued for eleven years for ten hours each week day without any serious interruption. A stream of water was allowed to trickle through the bearings and at five minutes before closing down oil was fed into them to prevent the shaft rusting and sticking over night when the machinery was not in use. The wear on the babbitt and boxes for the eleven years was about ¼ inch, and on the shaft it was nil. The increase in temperature of the shafting was inappreciable, and less trouble on that score was experienced with eleven years' use of water than with one month's use of oil.

Other Discussions.

G. W. Dickey, San Francisco, Cal., contributed a discussion on marine thrust bearings, and J. J. White, New Lisbon, N. J., treated of bearing boxes, particularly as used on wood working machinery. More on the subject of locomotive bearings was offered by George M. Basford, New York City. The principal points dwelt upon were that the bearing surfaces depend on the possibilities of lubricating and that a large factor of safety is necessary. P. H. Bean, Milwaukee, Wis., spoke of the practice in bearing design for Corliss engines. Lubrication was the principal subject of a discussion by A. M. Mattice, Milwaukee, Wis. He suggested that many bearing troubles would be avoided if the boxes were properly eased off at the edges and ample oil channels were provided. The drop by drop system of oiling, he said, was antiquated and that gravity systems and flooded lubrication were the best.

The subject of roller and ball bearings was opened by Frank Mossberg, Attleboro, Mass., and much useful information on the subject was added by C. R. Pratt, New York City; W. S. Rogers, Bantam, Conn., and others. It was brought out that the belief that ball bearings require no lubrication is unsupported by practice, but that only very little oil, or sufficient to prevent rust, is all that is necessary. H. K. Jones, New Britain, Conn., described something of the methods in use at the Corbin Screw Corporation, particularly with reference to oilers. Henry Hess of the Hess-Bright Mfg. Company talked from a number of blue prints which showed German de-

signs of ball bearings intended for very heavy service. E. W. Johnson objected to the expensiveness of roller bearings as usually made, he believing that it is not necessary to resort to extreme refinements and that the great consideration is flexibility. Oberlin Smith, Bridgeton, N. J., brought to mind a fact frequently overlooked, which is that there is an appreciable elasticity in steel balls and rollers which allows them to compress so that true point or line contact does not actually exist, but a surface contact is always made due to the metal being condensed on the center of compression. He remarked the necessity of providing a different kind of bearing for wheels loose on shafts from that provided for bearings in stationary parts.

From his experience with mill shafting, F. W. Taylor, Philadelphia, Pa., made reference to an empirical formula that he had found quite trustworthy. Though not given at the time this is to be incorporated in the discussion when printed in the society's transactions. It was his conclusion that with ordinary ball and socket shaft bearings the ordinary pressure permissible is 40 pounds per square inch, and the speed 10 feet per second. As the pressure is raised the surface velocity must be proportionately diminished. As to ball bearings, he thinks that any data based on their running less than two or three years in continuous service is misleading. The balls and the bearings, even when perfectly constructed, wear through fatigue of the surface, which will only show itself after from two to five years' service.

The discussion of bearings proved one of very widespread interest, but as the time was limited it was closed at this time and followed by the presentation of a paper on

"Reinforced Concrete Applied to Modern Shop Construction."

by E. N. Hunting, Pittsburgh, Pa. Referring to the advantages of reinforced concrete, the author treated in order its adaptability, strength, fire proof quality, durability and economy, and contrasted the effect of fire on it with the effect on structural steel. As an example of reinforced concrete shop construction the Taylor-Wilson Mfg. Company's plant at McKees Rocks, Pa., was described. The considerations in its design were that it should be absolutely fire proof, should be built at a minimum cost, should provide for heavy craneways and should have some artistic value. In detail the paper treated of its foundations, columns, beam construction, arch design, arrangement of steel in the arch, the design at the haunches and protection from frost. Numerous illustrations were used to fully explain the special features in the construction and reinforcement. The following quotes the author's conclusion:

"The unit cost of this work was approximately 3¼ cents per cubic foot. The building as completed is as near fire proof as is possible in any style of construction to build. As for repairs, it will need none. Paint is unnecessary on its surface to protect from the elements. The insurance rate made by the Board of Fire Underwriters is 30 cents per hundred, and it is considered by them to be the best risk in the Pittsburgh district. The works were designed and built by Robert A. Cummings, member American Society of Civil Engineers, and was under the direct supervision of the writer."

In discussing this paper George Hill, New York City, commended it as of value, inasmuch as it is impossible to get too much exact information on the subject. He regretted, however, that the cost statements did not include the price of labor, skilled and ordinary, the cost of raw materials on the ground, the cost of forms, types used, &c. He suggested that if it were professionally proper that the author should give this data to the society.

J. C. Schaeffler, Summerville, Mass., criticised the paper as not general enough, too crude and elementary. A printed discussion from H. C. Turner gave a somewhat historical account of the development of reinforced concrete construction, and several photographs were shown of the new building recently erected for the Robert Gair Company, Brooklyn, N. Y., by the Turner Construction Company. It was emphasized that construction is more important than design, and that inspections and tests are very necessary.

Prof. A. L. Williston, Pratt Institute, Brooklyn, N. Y., gave a review of the work done by Prof. Wilson at Columbia University, in the fire testing of a small concrete building. At the time these tests were made the results were given to the public. It need only be remarked that they were extremely favorable for the type of construction employed, and that after the fire the floor was able to sustain a load of 600 pounds per square foot with practically no greater deflection than would have occurred before the fire was started.

The cost of concrete construction was particularly spoken of by Prof. Carpenter. He criticised the paper under discussion as being somewhat misleading in the statements it made pertaining to costs. There was apparently a misunderstanding in the cost quoted per cubic foot, which should have been defined as for the building as a whole, so as not to have been mistaken for cubic foot of wall. It was his recommendation that reinforced concrete should not be used for the roof of a building, as money can be saved by using different materials. Cement he considers is not suitable on account of its high coefficient of expansion. His experience is that reinforced cement is good up to the first story of a building, but that beyond that point concrete blocks are better and cheaper. Mr. Taylor also suggested that the value of the paper would be enhanced if more details were given as to cost.

The morning session was concluded with some remarks by H. F. J. Porter, Pittsburgh, Pa., on fire protection. It had no bearing on the discussion of the morning but reverted to the subject of President Freeman's address on "The Safeguarding of Life in Theatres," given Tuesday evening, and printed in abstract in the last issue of *The Iron Age*.

A luncheon was served at the close of the session, and in the afternoon the members and guests were tendered a reception by the New York School of Automobile Engineers, 146 West Fifty-sixth street. Here an opportunity was given to study the methods of instruction used by this school and inspect the laboratory equipment.

THURSDAY EVENING.

The principal social feature of the meeting was, as usual, the reception at Sherry's, Forty-fourth street and Fifth avenue. President Freeman and President-elect Taylor received the members and guests. The remainder of the evening was devoted to dancing, during which a supper was served.

CLOSING SESSION.

Most of the professional papers were concentrated in the Friday morning session, held in the auditorium of the Edison Building. The first paper, presented by Prof. R. J. Durley, McGill University, Montreal, Canada, had for its subject

"The Measurement of Air Flowing Through Circular Orifices in Thin Plates."

Experiments were made to ascertain the laws governing the flow of air through circular orifices in thin plates at low heads and to measure the air discharged under conditions that could be easily duplicated. The practical use of such orifices is that they afford a convenient means of gauging the amount of air discharged by fans, blowers, air engines, compressors, &c. Use was made of Weisbach's and Fliegner's formulas. A third equation was deduced by the author, which resembled in form the two older ones. This is closely approximate up to pressures of 20 inches of water and is as follows:

$$\text{Actual discharge in pounds per second} = 0.6299 C d^2 \sqrt{\frac{i}{T}}$$

Where d is the diameter of the orifice in inches, i the difference of pressure, inside and outside of the orifice in inches of water, and T the absolute temperature of air, assumed as constant. The values of C, which is the coefficient of discharge, were given in a table for various heads and diameters of orifice. The paper continued with a description of the apparatus and methods of experiment and gave a number of curves showing the discharge in pounds per second for given sizes of orifices with various

differences of pressure. The following were the conclusions:

"The coefficient for small orifices increases as the head increases, but at a lesser rate the larger the orifices, till for the 2-inch orifice it is almost constant. For orifices larger than 2 inches it decreases as the head increases and at a greater rate the larger the orifice. The coefficient decreases as the diameter of the orifice increases and at a greater rate the higher the head. The coefficient does not change appreciably with temperatures between 40 and 100 degrees F."

"Results of the Preliminary Producer Gas Tests of the United States Geological Survey Coal Testing Plant at St. Louis."

This was the subject of the second paper, presented by Prof. R. H. Fernald, Washington University, St. Louis, Mo. Unfortunately this paper was prohibited from presenting some of the best results obtained in the producer gas tests until the official Government reports are issued. The later conditions were so much improved that the reliability of the results afterwards obtained make them of decidedly greater value. A complete detailed description of the entire plant will appear in the report, which will be published by the United States Geological Survey in a few weeks. The equipment consisted of a 250 horse-power Taylor pressure gas producer, furnished by R. D. Wood & Co., Philadelphia, Pa.; an economizer, a scrubber, a centrifugal tar extracter, a purifier and a gas holder. After going through a meter of 30,000 cubic feet per hour capacity the gas was delivered to a three-cylinder vertical Westinghouse gas engine. The engine has cylinders 19 x 22 inches and makes 200 revolutions per minute when delivering 235 brake horse-power on producer gas. It was belted to a six-pole 175-kw. Westinghouse direct current generator. The load on the generator was supplied by a water rheostat. One of the very valuable parts of the paper contained the reproduced forms used for the logs and reports of the test. These may well be made the foundation for the preparation of standard forms by the society for the conducting of producer gas tests.

The paper continued with an account of how the tests were conducted and several *fac-simile* report sheets were incorporated. A summary of the tests of 18 bituminus coals and lignites was printed in condensed tabular form. Official records were made in which as low as 0.95 pound of dry coal per hour was consumed in the producer per electrical horse-power developed at the switchboard. Assuming an efficiency of 85 per cent. for generator and belt, the consumption of dry coal per hour per brake horse-power would be only 0.8 pound. The author stated that "in the light of the information which has been obtained during the operation of this plant, together with the changes and improvements that will naturally be made in the construction and operation of producer plants for use in connection with bituminous coals and lignites, there is every reason to expect a development in this particular line which will make a marked increase in the efficiency of such installations."

The discussion gave evidence of the appreciation of the members that attention has finally been given to the subject of producer gas. This is the first paper dealing with it which has been presented, and it is very evident that in the future there will be more recognition given to the matter. A highly instructive talk on the practice in Germany was given by Mr. Junge, a member of the German Society of Mechanical Engineers. One of the obstacles in the way of satisfactory gas producer operation has been the great quantity of tar formed as a by-product. In Germany they now provide for burning this as soon as formed by having a secondary furnace zone. This is the provision made in the Dolsen producer. It is generally admitted that Germany is in advance of this country in the use of gas power, and the speaker urged that we take advantage of the knowledge that had been gained in his country. He mentioned the Theisen gas washer as one which has proved its practical value. A description of this apparatus was given in *The Iron Age*, August 18, 1904. In closing he stated that on the authority of the society of which he is a member he had been asked to suggest that the American society be invited to exchange representatives to attend the meetings of the two societies, the belief being that it would be to the mutual benefit to the societies as a whole, and calculated to increase the good feeling between them.

The paper had one especially fortunate effect in that it provoked a movement to have a committee appointed to recommend a standard code for testing producers, this to finally take a form resembling that adopted some years ago for testing steam boilers and known as the A. S. M. E. code. The Institute of Mining Engineers and the Iron and Steel Institute already have the subject under consideration and will adopt resolutions at the joint meeting to be held next year.

In closing the discussion the author drew attention to the fact that it has been found possible to use lower grades of fuel than were at first believed suitable. At the testing plant they are now using run of mine coal containing as high as 8 per cent. sulphur, where originally they did not consider it safe to use coal containing more than 1 per cent.

"The Pressure Drop Through Poppet Valves"

was the subject of the next paper, presented by C. E. Lucke, Columbia University, and was an effort to study the reason why a gas engine's power does not increase as the speed after a certain speed is reached. The paper was the thesis work of two students, R. M. Strong and F. R. Hollman, Columbia University, and had for its object the determination of experimental data on the relation between pressure drop through a poppet valve and the conditions tending to produce it. The pressure drop for a given rate of flow is dependent upon the fluid density as well as its velocity, the form of opening, the form of approach and exit, the character of the flow, whether steady or intermittent, the inertia of the fluid and the friction of the passages. In the practical designing of gas engines, air compressors or any machines fitted with poppet valves it is believed that the information given will be of value. "Pressure drop, although necessary to secure any flow through the valve, is detrimental to the machine, as it causes undesirable piston resistance and reduced volumetric efficiency of the cylinder. It may be reduced by allowing proper valve area to minimize fluid velocity, but too large a poppet valve for a given gas, or too large a lift for any given valve, introduces features of design equally as bad as too small a valve opening. The designer is thus forced to follow a middle course admitting some pressure drop through the valve, but not reducing fluid velocity so low as to require valves of excessively large diameter or excessively large lift."

The tests were made on both flat and conical seated poppet valves, both with steady and intermittent flow and with the air passing in both directions. The data was very fully tabulated, giving the pressure drop in inches of water, cubic feet of air per minute, the velocity in feet per minute and the coefficient of efflux. Numerous diagrams of valve lift and pressure drow were reproduced in the paper.

"Tests of Elevator Plant in the Trinity Building, New York City."

The fourth paper was read by its author, Arthur J. Herschmann, New York, and recounted the results of commercial tests on the hydraulic plunger type elevators in the new Trinity Building. One of the aims was the comparing of the economy when the water pressure was furnished by a duplex compound pump and when furnished by a high duty pump. The tests included the entire equipment from the boilers to the elevators and had for their particular object the deduction of costs. The author made no attempt to draw conclusions from the tests other than that with the fly wheel pump a saving of about 31 per cent. in steam over the compound pump was obtained. The complete reports of the tests were offered in the belief that they might be of use to other engineers who have to do with the operation of elevator plants in office buildings. Included with the paper were plans of the plant, details such as sections of the pumps, controlling valves, elevator plungers, &c.

A written discussion submitted by W. H. Bryan, St. Louis, Mo., referred to the paper appreciatively as along

lines which may be of no mean value to a large percentage of the members, and the writer commented on his own experience with elevator equipments. The paper was also indorsed by C. R. Pratt, New York City, and T. E. Brown. The latter mentioned the fact that this is probably the first published report of a test of the plunger type of elevator made by a disinterested engineer. He suggested some improvements that might be made in the installation in the Trinity Building, and compared the equipment in the Hanover Bank Building, giving tables of results. It was his opinion that the plunger elevator is absolutely safe. A question on this point was asked by one of the members who spoke of having noticed an appreciable swaying of the plunger when the car was near the top of its travel. Others explained that this was not at all uncommon, but was not a matter of concern inasmuch as the plunger does not support the car, and in fact is often supported in part at least by the car when the counterbalance is heavier than the car. The swaying of the plunger in all probability produces no injury to it, as the elasticity of the material is sufficient to provide for it. There are some who would take exception to this point, but so far as it is known there is nothing in practice to warrant a belief that there is any danger in having the plunger vibrate.

The paper was very severely censured by R. P. Bolton, New York City. He declared it to be so full of errors that he could place no dependence on any of the results. He objected to the manner in which the tests were conducted, and particularly deplored the fact that the paper contained mentions of firm names and illustrations of their apparatus that were in violation of the society's rules that nothing of an advertising nature should be allowed to enter into the transactions. Mr. Brown, who had previously discussed the paper, considered that Mr. Bolton's criticisms of the accuracy of the tests were too severe, and that in all probability the figures given for the elevator tests were to be relied upon, although the boiler tests might be somewhat in question. The author defended his paper as one which aimed only to cover commercial tests and offered to produce the original data, which he maintained was taken with careful regard for accuracy.

"The Realization of Ideals in Industrial Engineering."

This, the last paper of the morning, was on a subject which up to this time had never been given much attention by the society. It was presented by H. F. J. Porter, New York, and dealt largely with the ethical problems in the conduct of large factories and commercial enterprises. Welfare betterment is the term which has come to be popularly ascribed to the work that it was the effort of the paper to further. It was pointed out that in our day of very large industries the intimate relation between manager and men that at one time existed has been lost, and that it is only by giving special attention to the comfort of the employees that they may be kept satisfied. The attention to such details may be made a source of profit to the manufacturer by reducing labor troubles and enlisting the personal interest of the operatives to the end of securing more efficient means of production. In the author's words:

"If honest workmanship is desired, honest workers will be necessary for its accomplishment; if quantity of output is expected, skill and enthusiastic devotion to duty must be possessed by the operatives; if improvement in processes and perfection of product are to be hoped for, the workers must have intelligence and be given suitable opportunities for its expression; if the organization as a whole is expected to grow, not only in size but in strength and character, facilities must be offered for the improvement of the individuals and inducements made for taking advantage of them; if untiring aggressiveness against competition is desired, absolute confidence in the enterprise and its product will have to be developed in the organization, and if harmonious cooperation between departments and management is to be effected, a spirit of mutual helpfulness must be imbued in the individuals comprising them respectively."

The considerations necessary, in the order of their importance, are those which will improve the physical, moral and mental welfare of the workingmen. In other words, the first thing is to do all that is possible to maintain health; second, to surround the men with influences that make for a high standard of morality, and, finally, to place in their way attractive means for mental development. As the author indicated, there are many ways in which advancement may be obtained, but he emphasized that as the conditions in any one plant are individual, it is not safe to accept as a criterion systems which may have been adopted successfully in other plants. Among the more common expedients that have been tried to secure the good will of the employees are the provision of gymnasiums, club rooms, libraries, lunch rooms and model dwellings, these being features for making attractive the time spent out of the shop. To make the relations between the management agreeable during working hours there are in some plants standing committees comprising representatives from both sides to meet at stated intervals to consider questions, complaints and suggestions. In this way the organization may be kept in touch with the attitude of the employees, and an honor system is established which greatly improves discipline. The suggestion system now so generally adopted by large concerns is one that has proved of merit. It develops in the operatives the power to observe, improves their capacity of initiative and inspires their ambition. When the men are encouraged by the award of prizes to offer suggestions for the improvements of processes or methods of work, it can easily be seen that the result is profitable to the employer. To again quote from the paper: "It is only reasonable to suppose that if employer and employee work together for a common end the enterprise will pay better than if each works for his own interest simply, with the full persuasion that the other is trying to get out of him all he can. Cooperation must supplant antagonism to secure a full meed of success.

In lieu of reading his paper the author spent the time allotted to presenting it in showing a number of lantern slides from photographs, taking in a large number of works, illustrating provisions for the care of sick or injured employees, lunch rooms and a variety of other provisions made for their comfort and welfare. Contrasted with these were a number of views in places where less advanced arrangements prevailed.

Adjournment.

At the conclusion of the discussion of this paper the meeting was adjourned. The final registration showed an attendance of a total of 1330 members and guests. The next meeting of the society will convene at Chattanooga, Tenn., at a date to be set later, probably toward the end of next May.

The Risdon Iron Works, San Francisco, Cal., has been awarded contract by the Edison Electric Company of Los Angeles for lining its huge pressure tunnel for the Kern River No. 1 power plant. This tunnel is an incline through the granite of the mountainside and has a net fall of 875 feet from top to bottom. The water is delivered under this pressure at the bottom and by means of branch pipes delivered to impulse tangential wheels for developing 40,000 horse-power. The weight of the main steel lining is approximately 400 tons and of the branch connections 150 tons. The first item was let for a gross sum of $62,000 and the connections at a price of 7.6 cents per pound in place.

Pig iron production in the German Empire, including Luxemburg, was 1,006,943 tons in October, 1905, against 953,780 tons in September, 1905, and 868,523 tons in October, 1904. This is the first time a month's production has exceeded a million tons. The distribution of the month's product was as follows: Foundry iron, 180,335 tons; Thomas iron, 654,702 tons; ferromanganese and spiegel, 67,122 tons; forge iron, 68,733 tons. The total production from January 1 to October 31 amounted to 8,970,539 tons, against 8,399,492 tons in the corresponding period of last year.

Iron, Steel and Shipbuilding in Scotland.

GLASGOW, December 1, 1905.—Our iron market is assuming a new and interesting phase. The bulls of Cleveland warrants are becoming discouraged at the manner in which the stock of No. 3 iron is piling up in store and therefore the price has relapsed. The warrant price, however, is so remunerative to furnacemen that they go on making for store regardless of the feelings and pockets of the bull operators. The bear element has been stimulated by the Russian troubles, which not only have an adverse influence on all speculative markets but have caused some Continental holders of iron warrants to realize. Hematite iron also is easier, because steel makers have ceased to buy, having covered their requirements for some time to come. All steel makers are extremely busy, but they have not been booking so much new business of late, since prices were advanced. The price of makers' iron in Middlesbrough has firmed up in sympathy with warrants, and No. 3 may be quoted at 53 shillings to 53 shillings 6 pence, while No. 4 foundry and forge are proportionately lower. The stock of No. 3 iron in store at Middlesbrough is now 608,600 tons. Total stocks of pig iron in public stores in the United Kingdom were 727,228 tons on November 24, as compared with 218,153 tons on December 31, 1904, and 122,663 tons on December 31, 1903. Hematite warrants have been active on the basis of 69 shillings 9 pence to 70 shillings, cash. Scotch irons are now quoted as follows: Coltness No. 1, 76 shillings; No. 3, 66 shillings; Garlstenie No. 1, 68 shillings; No. 3, 63 shillings; Langloan No. 1, 70 shillings; No. 3, 65 shillings; Cambroe No. 1, 65 shillings; No. 3, 62 shillings.

There are many reports, all unconfirmed, that sales have been made for shipment to the United States, but no charters have been made for such iron, as has been asserted. Three steamers are wanted for the balance of a contract of 30,000 tons of hematite for the United States.

German Steel Advanced.

A purchase of 10,000 to 20,000 tons of Cleveland iron is reported to have been made on German account for shipment in February next and further business is in prospect. The improved demand from Germany, where production of pig iron is now proceeding at the unprecedented rate of 1,000,000 tons a month, illustrates the activity of trade in that country. The demand for semimanufactured steel continues brisk, and prices have been further advanced by the German Steel Trust, whose agents in this country quote billets 5 shillings per ton higher. Although Clyde shipyards have been very successful in procuring orders for new vessels, and steel works, forges and mills are benefiting accordingly, it is remarkable how persistently the German steel manufacturer continues to undercut our traders in certain classes of their work. Much of the shafting for our new vessels is being obtained from Germany at prices below the cost of production in this country. There are, however, still some British firms who adhere to the rule of "all British" material.

Shipbuilding and Engineering Combine.

An important combine between shipbuilders and engineers has just been completed here. It includes Cammell, Laird & Co., Sheffield and Birkenhead; John Brown & Co., Clydebank, and the Fairfield Shipbuilding & Engineering Company, Glasgow. Each firm remains independent in management, but Cammell, Laird & Co. acquire a financial interest in the Fairfield Company, and the Fairfield Company an interest in Cammell, Laird & Co. In the Coventry Ordnance Works each of the three shipbuilding firms will have a common interest. The arrangement resembles that made some time ago between Vickers, Sons & Maxim and William Beardmore & Co. The Fairfield Company will now be able to complete and make ready for sea warships of all classes.

A Great Year for Scotch Shipyards.

This year promises to show exceptional figures for the Scottish shipbuilding industry. The November bookings have added 75,000 tons to the tonnage on hand, and the total of orders is now larger than at any time for years. Most of the yards have work that will keep them very busy for a year. Vessels launched during November numbered 25, representing 57,048 tons. The total for the eleven months all over Scotland is 514,541 tons. The previous highest eleven months' total was in 1901—500,503 tons. The Clyde November output was 22 vessels of 55,358 tons, as compared with 28 vessels of 57,910 tons last month, and 17 vessels of 25,118 tons in November of last year. The Clyde eleven months' total is 240 vessels of 472,911 tons, a record figure. Of vessels launched, 28,210 tons were for Clyde owners, while 21,108 tons were for foreign and Colonial owners. For the year, up to date, orders representing about 588,760 tons have been booked. During the same time 514,549 tons have been launched. It is expected that a couple of the new British armored cruisers will be built on the Clyde, but the orders are not yet placed.

New York City's Coal Consumption.

The coal tonnage of the largest American city has always been a topic of interest to the trade, says the *Coal Trade Journal*. It has never been an easy matter to ascertain the tonnage used, as precise data are unavailable. Prior to the expansion of the city limits it used to be said that 6,000,000 tons would cover requirements: then after Brooklyn, Queens and Richmond were added on the tonnage was estimated at 12,000,000 tons. With the co-operation of important interests we have prepared a revised statement by which it will be seen that a very notable increase in tonnage has developed within the past few years. The totals, 9,000,000 tons of anthracite and 6,500,000 tons of bituminous, making a grand total of 15,500,000 tons, are substantially verified by various railroad reports, and we have endeavored to distribute this tonnage among the several classes of trade according to advices received from well informed shippers and dealers. The result for 1905 follows:

Anthracite.

	Tons.
1. Domestic, private houses and small stores using mostly egg, stove and nut	2,500,000
2. Flats and apartment houses, heating, &c., using mostly broken or pea and buckwheat	3,000,000
3. Hotels, clubs, theaters, factories, institutions, &c.	1,500,000
4. Gas requirements, estimated from annual reports	900,000
5. Elevated and surface railroads, about one-third of their total tonnage	400,000
6. Steamboats, tugs and shipping, also steam railroad fuel, for heating, &c., within city limits	400,000
7. Department stores, office buildings, &c.	600,000
Total	9,000,000

Bituminous.

1. Steam trade, factories, refineries, &c., including gas and electric plants	3,000,000
2. Steamship bunkering	3,000,000
3. Heating stores, office buildings, &c.	400,000
4. Blacksmith trade, including wheelwrights and carriage manufacturers	75,000
5. Fuel for stationary plants, construction work, &c., of steam railroads within the city	25,000
Total	6,500,000
Grand total	15,500,000

NOTES.—There is a small amount of coke and charcoal used in New York for special purposes, but this business is to be calculated in pounds rather than in tons.

Locomotive tonnage is, in the main, excluded. The Long Island Railroad is the only road having its principal coaling station within the city limits, and some of that tonnage may be in under the steam trade headings of each subdivision. From points on their lines the New York Central and New Haven railroad companies send into the Grand Central Station or other city terminals such coal as may be required for outgoing trains. Railroad coal for stationary plants, heating, &c., is delivered in carloads or by stevedores according to whether or not carting is required.

The manufactures of New York exceed in value those of any other American city, but the amount of coal used in connection therewith, aside from three or four refineries and the making of gas and electricity, is not as great as might be supposed from the value of output. Leading lines are clothing, books and periodicals, and candy, none of which requires much power. Pianos, paints and varnish and cordage are also important lines of manufacture which require very little fuel.

THE IRON AGE

1855—1905.

New York, Thursday, December 14, 1905.

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The High Prices of Metals.

It is interesting to note that of the common metals, tin, lead, spelter and copper, the recent rapid advances have brought the first two to prices far beyond, and the latter two to prices about equal to, the record prices made in 1899-1900. Until now the prices then made for these metals stood as the record for many years—since 1880 for lead and spelter, since 1882 for copper and since 1888 for tin.

It is true that in the past these four metals have been of quite a speculative character. Tin is still subject to speculation in London; spelter is to some extent an object of speculation; copper is much less so than formerly, although it is influenced by an accompanying speculation in the shares of copper companies, but lead has been well removed from artificial stimulation by the wise policy pursued by the dominating interest in that line. There have always been forces at work in the trade in these metals which make the most of natural conditions to bring about extreme prices, but the present state of the market in all four shows that but a comparatively light touch of the speculative influence has been applied.

Turning to iron and steel products, it is not necessary to cite any figures to prove that the present average level of prices is far below that reached in the 1899 boom. There is a most striking difference. Most iron and steel products are cheap now in comparison with 1899 prices; some of them are not greatly above the lowest prices on record, and in several lines it can be shown that the spread between raw material and finished product is less than it was when the low records for the finished product were made. This is particularly true of tin plate.

The frequently repeated assertion that prices of many iron and steel products have been held down by main force in the present era of extreme demand finds strong support in the comparison with these metals. They are subject to a demand which rises and falls much the same as does the demand for iron and steel. Collectively, it can hardly be claimed that they were subject to materially different influences in 1899-1900 than they are now. In the case of iron and steel products the spirit which now pervades the trade is quite different. The experience of the boom in 1899 and the collapse in the following year taught a lesson, and that lesson is being heeded. Besides, there are forces in the iron trade which did not exist at the time of the earlier boom, and these forces are exerted to restrain undue advances.

The Preservation of Niagara Falls.

It is very evident that public interest is being aroused for the preservation of the Falls of Niagara. The extent of the power development on the Canadian side, coupled with the eager efforts made to obtain extravagant franchises from the Legislature of New York, has directed attention to the conditions surrounding Niagara. President Roosevelt gives national importance to the subject by according it place in his annual message to Congress, and at a meeting of the Canadian section of the International Waterways Commission, recently held in Toronto, the time was passed in discussing the policy which the Canadians will endeavor to follow in dealing with the important question of the Niagara power development and the preservation of the scenic beauties of the great cataract. Beyond question much will depend upon the powers of the commission to regulate the power companies already established.

Up to this time there has been no international regulation of the rights of power development at Niagara, for it is only recently that the subject has been considered from this standpoint, it being clear that, separately, the State of New York and the Province of Ontario can hardly be relied upon to control the situation. Franchises on the Canadian side of the river are granted by the provincial government, while those on the New York side are granted by the State Legislature. A natural rivalry exists for industrial greatness, the tendency being to overlook the sentimental thought for the preservation of the scenic spectacle. New York State gets no revenue from the power development, while the commissioners of Victoria Park have said they expected the revenue from the Canadian franchises to amount to $200,000 annually. It is time that a body, vested with powers from the federal governments of both countries, should step in and regulate power matters at Niagara in the interests of the people on both sides of the border.

Water Storage and the Public Good.

The building of storage reservoirs in connection with the development and improvement of water power is advancing the general good along the streams especially in the older sections of the country. This work has really just begun. The latent possibilities of rivers which have been employed for water power during generations are as yet imperfectly comprehended. In a great many instances headwaters are being considered with the view of building auxiliary reservoirs which will serve partly to increase normal water power and partly, which is usually more important, to furnish water during periods of drought.

In the older parts of the country, where the cutting away of forests has made a marked difference in the natural storage capacity of watersheds, any material addition to the flow of water during dry seasons becomes not only a source of financial profit but a safeguard of the public health. Streams which furnish power for manufacturing are almost always the depository of sewage from the mills and their towns and villages. And it is to this very type of stream that attention is being paid by owners of water privileges in seeking out headwaters on the main stream or its tributaries which may be dammed to create large storage reservoirs. New England mill owners are organizing syndicates to store water for their common good, each to take the water in his turn as it reaches his private mill pond on the stream after being released from storage. The reservoirs are easily filled by the spring and autumn freshets and are replenished at other times by the natural rainfall. They serve an important purpose in catching the great volumes of surface water that come with the tropical showers which are not a rare occurrence in the heat of summer. Sometimes the need of auxiliary reservoirs is intensified by the seizure of an important part of the watershed by some city which must increase its water supply. In this new work the owners usually plan to go further than to overcome the results of climatic changes or other loss

of water, and strive to increase the average normal horsepower to a point beyond what had previously been attained.

It may easily be seen that such concerted action, forcing into use all possible sources of water supply, will bring about conditions very much better than have heretofore existed, and doubtless the not very distant future will see such development accomplished. It is another result of the perfecting of electric generating machinery and transmission equipment which makes it profitable to utilize the available water power in parts of the country where there is a market for power. It is also a result of the better understanding by the owners of water power, whether they use it directly or through the medium of electricity, of the value of this source of energy as a means of keeping down coal bills.

A Remarkable Situation in Ore.

An entirely unprecedented condition appears in the Lake Superior iron ore trade. In one and the same week the concluding shipments were made in an unparalleled season's movement, and in a whirl of buying 90 per cent. of the merchant ores available for shipment in 1906 were swept up. All the choice grades have been practically sold out for next year. Whereas sellers found reason to believe that the bulk of the 1906 ores would be sold out by the opening of the new year, they had no idea that such a condition would be found to exist at the end of the first week in December. It is to be noted also that while six weeks ago there was a feeling on the part of some merchant ore interests that an advance of 25 cents a ton over the basis of 1905 was sufficient the advance of 50 cents a ton finally decided upon—and in the case of certain high grade ores it went to 58 cents—seemed not in the least to diminish the eagerness of consumers to contract for their full requirements from May 1, 1906, to May 1, 1907. This is especially noteworthy, in view of the fact that there will be no chance to get lower priced ore for nearly 17 months, no matter what turn the iron market may take in the meantime.

The water shipments of ore from the Lake Superior ranges are somewhat more than 33,450,000 tons for the year. To these are to be added the all-rail shipments to furnaces in Michigan and Wisconsin and at South Chicago, besides the unusual shipment of about 100,000 tons by rail to Pueblo, Col. The all-rail shipments in recent years have averaged 550,000 tons, having been 596,000 tons in 1904, 640,000 tons in 1903, 531,000 tons in 1902 and 436,000 tons in 1901. With the shipments to Colorado it is to be expected that the all-rail total for this year will be beyond the average of the preceding four years, so that the total of Lake Superior ore moved from the mines this year will doubtless exceed 34,100,000 tons. This is an impressive total and more so when placed beside the record of recent years, as below:

Shipments of Lake Superior Ores.—1892 to 1905.

	Gross tons.		Gross tons.
1905, estimated	34,100,000	1898	14,024,673
1904	21,822,839	1897	12,464,574
1903	24,289,878	1896	9,934,828
1902	27,571,121	1895	10,429,037
1901	20,593,537	1894	7,748,312
1900	19,059,393	1893	6,065,716
1899	18,251,804	1892	9,072,241

The shipment of 34,100,000 tons this year, it will be seen, compares with an average of 23,500,000 tons for the four years preceding, or an advance of nearly 50 per cent. over that average. When the comparisons are made with the years in the nineties, the marvelous facility with which recent years have doubled and trebled the records of the nineties is given new emphasis. The present year's total is more than 5½ times that of the panic year 1893, 4½ times that of 1894 and 3¾ times that of the prosperous year 1892, which was high point for the Lake Superior ore movement up to that time.

It is known that pig iron production in recent years has not increased over the outputs of the years of the decade preceding 1900 in the way that recent Lake ore outputs have increased over the outputs of the nineties. One factor, plainly marked in the nineties, was the extension of the use of Lake ores to the exclusion of local ores. That phase of the movement is not marked now, the use of Lake Superior ores having become an exclusive use in a large part of the Northern iron producing districts of the country. But there is an important element that must be reckoned in accounting for the rapid mounting of the Lake Superior total to unheard of records. It is the gradual lessening in the average iron content of Lake ores. Eight or ten years ago this average was 59 to 60 units of metallic iron. It is safe to say that the average iron content of the 34,000,000 tons shipped this year is between 54 and 55 per cent. In other words about 3,000,000 tons of this year's shipments represent the diminution in iron content, as compared with ten years ago. In the old days, before the Carnegie and Oliver interests set the pace for ownership of iron mines by consumers, the furnaceman insisted on having high grade ores, and in many cases, in the sharp competition of those times, mines were robbed of the richest of their ores by wasteful mining methods, the less desirable ores being left in their places. Now that steel works furnacemen are their own miners the ores are taken out as they come and judicious mixing is carried on at the mines, the policy being to remove the ore in the most orderly and economical way, looking to the future as well as to the present. The average shipment of to-day would not have been accepted by the merchant furnaceman of ten or twelve years ago.

The days of skimming the cream of the Lake ore deposits are over, and each year's installment is brought down with a thorough realization that a great cavity that will never be filled has been left in the greatest and richest iron hills in the world.

Another factor of which more has been said in connection with the use of Lake ores in recent years is the loss by the blowing over of flue dust. Of this year's shipments about 1,000,000 tons will find its way into the dust catchers of furnaces using Lake Superior ores. The increasing percentage of Mesaba ores has emphasized this loss. In 1902 Mesaba ores were 48 per cent. of the total shipments; in 1903 they were 53 per cent., in 1904 they were 55.7 per cent. and in 1905 they are about 59 per cent. With the failure of the old ranges to keep pace with the increasing drain the Mesaba percentage will continue to mount.

Adding 34,000,000 tons to the stocks on Lake Erie docks and in furnace yards at the opening of navigation this year gives a total of 40,000,000 to 41,000,000 tons of ore available for use in the twelve months ending May 1, 1906. That the consumption is far below that figure is well known. But as the total consumed grows the factor of safety in the reserve regularly carried on docks and in furnace yards will amount to a larger tonnage. There is also to be considered the constantly growing volume of inert ore at lower Lake docks and in furnace yards. With the modern machinery for handling ore in great bulks much ore is left untouched where it is originally put. Furnace storage yards have greatly multiplied in the past ten years, and what with the unmoved ore about trestles and bins and the

portions of ore piles that are never reached by the heavy grab buckets the small tonnage of inert ore once confined to Lake Erie docks has been multiplied over and over.

What is most impressive in the introduction into the Lake ore trade of tonnage figures that only a few years ago would have been considered a dream of the distant future is the fact that these large totals are to grow, even though declines and depressions come, and that this growth must be in the face of the fact that the years of the old ranges on Lake Superior can be definitely measured.

The Combustion Engine and the Coasting Trade.

The introduction of combustion engines of large capacity as auxiliary to sail power in the coasting trade must mark the beginning of another and very important usefulness of this type of motor. One of the Maine shipyards has taken the contract to build for coal carrying purposes a 2000-ton four-masted schooner, which will be equipped with a 500 horse-power gasoline engine, for use in calm weather and in case of emergency. It is generally expected that this vessel will be quickly followed by others similarly equipped, and that the auxiliary powered coasting vessel will be the rule rather than the exception in the not very distant future. The sailing yacht and the small fishing vessel have already reached the point where the auxiliary kerosene or gasoline engine is considered almost as indispensable as the sails themselves. But hitherto the sailing vessels of the coasting trade have had to depend entirely upon the wind and there has been no disposition to install engines, because until very recently the combustion engine of sufficiently large power had not reached the point of entire reliability and small initial cost. The gasoline and kerosene engines have been developed with wonderful rapidity, as we have pointed out from time to time when new fields have been opened to these types of motor.

The ordinary sailing vessels of medium or large size cannot afford to employ steam; in fact, it is because they depend upon the wind that they are cheapest of the freight carriers. A steam engine equipment is expensive in its initial cost, in its operation and maintenance and in the valuable room occupied. Therefore for many kinds of freights, where rapid transit is not indispensable, the sailing vessel still holds an important place in commerce. The introduction of the combustion engine, however, will not add materially to the cost of the sailing vessel nor will it be expensive to operate, because it will be merely an auxiliary, with the primary purpose of eliminating loss of time in calm weather and of adding safety in that the motor will enable the mariner to get to a haven when gales threaten his heavily laden vessel. Doubtless the kerosene engine will have the greater future for this class of work, because of the cheaper fuel and lesser element of danger from the presence of that kind of fuel aboard ship. Tests of the several general types of engines will doubtless result in the development of some pretty well recognized standard of equipment. The general adoption of auxiliaries in large merchant ships may be deferred for a while awaiting the outcome of practical experiments, but this period of probation will be short unless the experience of combustion engines for other purposes is contradicted. The farm engine, the auxiliary engine for yacht and fishing smack and the motor boat sprang into general use almost before the public realized that they had made a substantial beginning in their important fields of usefulness. So it should be with the great coaster and the ships which ply the high seas, which then need never lie becalmed, but, propelled by petrol power, will keep on their way over a windless ocean.

PERSONAL.

We are in a position to state on the highest authority that there is no truth in the reports that W. E. Corey had some time, or recently, tendered his resignation as president of the United States Steel Corporation, nor has the question of his resignation been discussed officially or unofficially by the Board of Directors.

C. E. Eberts, formerly manager of the blast furnace of the Carnegie Steel Company at Zanesville, Ohio, has been transferred to the blast furnace at Columbus in a similar capacity. He has been succeeded at Zanesville by his brother, John Eberts, of New Straitsville, Ohio.

Alexander C. Humphreys, president of Stevens Institute, Hoboken, N. J., has been elected a director of the Equitable Life Assurance Society.

The new ore freighter recently ordered by W. H. Becker of Cleveland, Ohio, from the American Shipbuilding Company will bear the name of Wm. G. Pollock of Cleveland, secretary and treasurer of the Pittsburgh & Lake Angeline Iron Company, and long prominent in the lake ore trade.

T. M. Simpson, for several years manager of the Philadelphia office of A. D. Granger & Co., has been appointed district sales manager of the Weber Steel Concrete Chimney Company, Chicago, with offices at 1632 Land Title Building, Philadelphia. Mr. Simpson will have charge of the Philadelphia territory and the Atlantic Coast States. The Weber Company contemplates establishing an office in New York within the next few weeks.

John Roberts has been appointed superintendent of the rolling mill of the Shenango Iron & Steel Company at Wheatland, Pa., which is expected to be put in partial operation this month.

Joseph W. Rutledge, vice-president of the finishing department of the Amalgamated Association, has resigned and has been succeeded by B. F. Jones of McKees Rocks, Pa.

The Delaware & Hudson Company has appointed W. A. Moyer its industrial agent, with office at Albany, N. Y.

Andrew Fletcher of the W. & A. Fletcher Company, Hoboken, N. J., returned from Europe on the Carmania for the purpose of observing the performance of its turbine engines, his company having contracts for building some vessels similarly equipped.

L. C. Biehler, traffic manager of the Carnegie Steel Company, has been elected president of the Pittsburgh Traffic Club.

Some very large orders for rolling stock have recently been placed. Among these are 200 locomotives for the Pennsylvania Railroad, making a total of 450 for delivery next year; 50 for the Wabash lines east of Toledo, 40 for the St. Louis & San Francisco, and 20 for the Atchison, Topeka & Sante Fe. Among recent freight car contracts are 6250 for the Chicago & Eastern Illinois, 5000 for the Wabash lines east of Toledo, 2000 for the Illinois Central, 1400 for the Rock Island and 400 for the Buffalo, Rochester & Pittsburgh.

The remarkable tensile strength of 101.2 tons per square inch has been obtained in a specimen of nickel vanadium steel containing 0.14 per cent carbon, 0.51 per cent. manganese, 9.36 per cent. nickel and 0.29 per cent. vanadium. The best previous record for nickel steel is said to have been 88.8 tons. Mild steel, containing 0.25 per cent. carbon and 0.40 per cent. manganese was raised in tensile strength from 30 to 47 tons per square inch by the addition of 0.25 per cent. vanadium. Tests have demonstrated that the addition of a very small quantity of vanadium will add 50 per cent. to the elastic limit of mild construction steel without seriously impairing its ducility.

A Bosh Cooling Device and Tuyere Jacket Mantle.

The No. 2 furnace of the Sloss-Sheffield Steel & Iron Company, at Birmingham, Ala., has some novel features in bosh cooling arrangements and in the tuyere jacket mantle. The lines of the furnace, as designed by J. J. Shannon, general furnace manager, are indicated in Fig. 1, so far as bosh and tuyere regions are concerned. In Figs. 2 and 3 are shown details of the bosh cooling plates

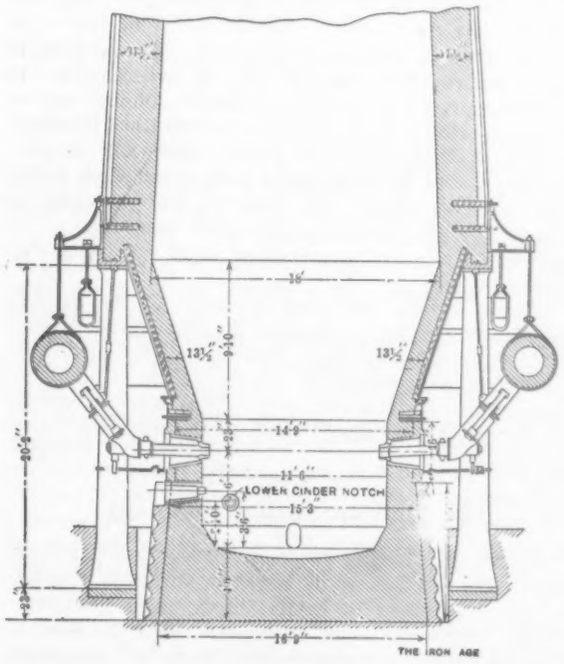

Fig. 1.—Section through No. 2 Furnace of the Sloss-Sheffield Steel & Iron Company, Showing Position of Vertical Cooling Plates.

and of the tuyere jacket mantle, on which a patent has been issued to Ernest Dreyspring of the City Furnaces of the Sloss-Sheffield company, Mr. Shannon and James W. McCune.

The use of the vertical cooling plates necessitated a petticoat jacket which is made of ¾-inch steel, butt jointed, with lap plates on the outside. The top of the jacket is riveted to the mantle plate. At the lower end of the jacket is a 6 x 4 x ½ inch angle riveted on the outside and a 4 x 4 x ½ inch angle riveted on the inside. These angles are so placed as to use the same rivets in fastening to the steel jacket. The outer angle bears on

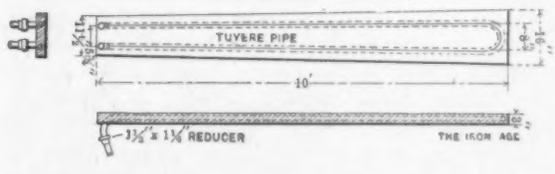

Fig. 2.—Vertical Bosh Plates, with Embedded U Pipe.—50 Required.

the tuyere jacket mantle, while the inner angle serves as a shelf on which rest the vertical cooling plates. These plates are of cast iron in which are cast 1½ inch tuyere pipes bent in U shape. They are of such size and number as to inclose entirely the bosh wall, and they extend above the mantle about 8 inches so as to form a protection to the latter against heat or break-outs. This method of using the old form of U pipes—that is, embedding them in cast iron—is found to be of great advantage in that there is a more uniform diffusion of the cooling effect, the iron offering less resistance to the flow of heat than fire clay. The weight of these plates is also an advantage in that it holds them in position, whereas when U pipes are used alone it is found that they often work out until the upper end extends clear of the brick work and out into the bosh chamber.

The tuyere jacket mantle is constructed by providing, in ordinary furnace cooling plates, pockets for bronze cooling blocks in one casting. Cooling plates of this design are in use in two of the furnaces of the Sloss-Shef-

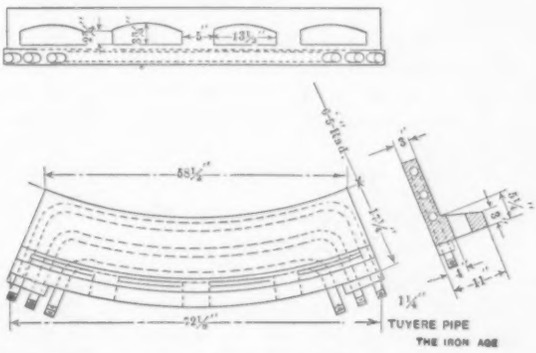

Fig. 3.—Tuyere Jacket Mantle Plates.—8 Required.

field Steel & Iron Company. One of these has been in operation 24 months and the other 15 months. Both furnaces keep unusually cool boshes.

Furnaces Long Idle Preparing to Start.

In connection with the recent publication of the American Iron and Steel Association relating to the blast furnace capacity of the country it was estimated that the furnaces which had been idle from June 1, 1904, to November 1, 1905, had a capacity of 1,500,000 gross tons a year. The association has since ascertained that 17 stacks, with an annual capacity of 601,500 tons, most of which were last active in 1903, have resumed operations since November 1 or are preparing to resume at an early day, and that 39 stacks, with an annual capacity of 1,197,600 tons, are not likely to resume work in the near future. Of the 17 stacks referred to 8 are coke stacks, with an annual capacity of 435,000 tons; 7 use charcoal, with capacity of 92,500 tons; 1 with capacity of 38,000 tons uses mixed anthracite and coke, and 1 with capacity of 36,000 tons uses anthracite alone.

The *Bulletin* of the association says: "The blast furnaces which are now being built and which are to be ready for blast in January, February, March and April, 1906, as mentioned in detail in our last issue, will have an annual capacity of 915,000 tons. If to this capacity we add the 601,500 tons above mentioned we will have 1,516,500 tons of additional blast furnace capacity that will probably be available by the end of May, 1906. If to this capacity we add the 28,635,000 tons reported in our last issue for the whole country it will be found that within the next six months we will have an available capacity of at least 30,151,000 tons of pig iron. This capacity, making due allowance for furnaces necessarily idle, should be sufficient to supply all demands for pig iron in the period mentioned."

The first official inspection of the Philadelphia Rapid Transit Company's subway in that city was made December 2, when the Engineers' Club of Philadelphia was the guest of the company. Chief Engineer William S. Twining, aided by Assistant Engineers C. C. Mills, Stephen Harris, Frank R. Fisher, J. D. Jacques and J. S. Brown, were in charge of the inspection. Considerable interest was manifested in the work in its various stages, and the subway was traversed from its entrance at Twenty-third street to its present terminal at Fifteenth street. Stations are nearing completion at Nineteenth and Fifteenth streets, while the tracks for local service have all been laid. The ventilating system has been practically completed, as has also the lighting system, and the company anticipates starting local service about December 20. In addition to the members of the Engineers' Club, a number of prominent engineers from Philadelphia and other cities were present, the inspecting party numbering about 150.

To Amend the Drawback Law.

WASHINGTON, D. C., December 12, 1905.—A very decided impetus has been given the movement to secure the passage of a bill liberalizing the drawback laws by an urgent recommendation contained in the annual report of the Secretary of the Treasury. The Secretary goes so far as to advocate the substitution principle of the French law. The first week of this session of Congress has witnessed the introduction of four bills amending the drawback statutes. It is believed that the apparent indisposition of the majority leaders of both houses to give consideration to any measure designed to reduce the tariff will strengthen the movement for more liberal drawback laws, as it will serve to emphasize the necessity for supplying exporting manufacturers with raw materials at the least possible cost.

Secretary Shaw's View.

Secretary Shaw has for several years been regarded as friendly to the general movement to relieve the drawback law of technicalities that have operated as restrictions upon producers and exporters, and under his supervision the Treasury Department has relaxed all unnecessary restrictions not specifically required by the statute. In his annual report, however, he indicates a policy even more liberal than that he has been able to pursue. He says:

> Under existing laws manufactured articles produced in whole or in part from imported material, and exported under certain conditions and limitations, are allowed a drawback equal to 99 per cent. of the duty paid upon the imported material thus consumed. In every feasible way the Treasury Department has endeavored to simplify the application of this principle and to make its operation practicable. In my judgment the law should be revised and simplified, and properly safeguarded substitution, similar to that now allowed in France, should be authorized.
>
> Manifestly the Government cannot protect the American producer in the foreign market. The best it can do is to insure the employer of American labor, who exports the product of that labor, every possible advantage and encouragement. Manufacturers should be limited to the employment of American labor; they should pay the American scale of wages, but when they export the product of this labor, thus placing it beyond competition with others within the American market, they should have the limit of encouragement in the way of cheap raw material and the right of substitution.

Measures Amending the Law.

On the day Secretary Shaw's report was sent to Congress Representatives Lovering and McNary of Massachusetts introduced four bills providing important modifications in the existing drawback law. The most important measure presented by Mr. Lovering represents a consolidation of several bills introduced by him in the last House. In section 1 he has sought to amend the law to obviate the technical objection which has defeated many meritorious drawback claims on the ground that while the imported raw materials upon which drawback of duty has been sought may have been used in the "production" of goods for export, such goods have not been "manufactured" within the meaning of the term as construed by the United States Supreme Court. Section 2 embraces the substitution feature advocated by Secretary Shaw, under which identification of imported materials is waived where an equal quantity and value of foreign materials can be traced to the possession of the manufacturer. Sections 3, 4 and 5 provide for the payment of drawback on materials used in the manufacture of stores intended for consumption on vessels in the foreign trade. Section 6 allows drawback on imported materials used as coverings or wrappings of exported articles.

A Free Alcohol Bill.

Mr. Lovering's second bill permits domestic alcohol to be withdrawn from bonded warehouse with rebate of internal revenue tax for use in the manufacture of goods for export in exactly the same manner that drawback of duty is now allowed on foreign alcohol imported for a similar use. The effect of the passage of this bill would be to enable manufacturers of metal finished with lacquers, bronzes, enamels, &c., to use domestic grain alcohol instead of employing foreign grain spirits or domestic wood alcohol, which is an inferior substitute.

Representative McNary's first bill is substantially the same as section 1 of the Lovering bill, which embodies the substitution principle as applied to drawbacks. It goes further, however, in that it permits the bonding of domestic manufactured products in lieu of the payment of duty on imported materials of like quantity and value, but in the draft as presented in the House this privilege is limited to lumber. Mr. McNary is understood to have in preparation other bills dealing with ores of all kinds.

The second bill presented by Mr. McNary provides for the amendment of Section 2513, Revised Statutes, which relates to the importation of material for the construction of ships for foreign account. He proposes to amend this section by adding thereto a provision that all materials of foreign production which may be requisite and necessary for the construction and equipment of plants and shipyards to be used for the building of vessels in the United States for foreign account or ownership for the foreign trade, or as American vessels adapted for employment in the foreign, coastwise, Porto Rico, Philippine or Panama Canal zone trade, or for vessels for the American Navy, may be imported in bond under such regulations as the Secretary of the Treasury may prescribe, and upon proof that such materials have been used in the construction of such shipyards or ships no duties shall be paid thereon.

This is a very important extension of the principle embodied in the laws relating to the importation of materials for the construction of vessels for foreign account, inasmuch as all materials for the equipment of plants and shipyards are granted free entry. It is doubtful whether this feature will commend itself to the majority leaders in Congress. W. L. C.

The Morgan Spring Company.

The Morgan Spring Company, Worcester, Mass., announces the election of its board of directors following the recent increase in capital stock from $100,000 to $700,000, which was made in connection with the purchase of the plant of the Youngstown Bolt Company, Youngstown, Ohio, and the building of a rod mill. The board now consists of Charles H. Morgan, Jerome R. George, Rufus B. Fowler, Frank F. Bullard and Paul B. Morgan, Worcester; Henry Wick, Warner Arms, Walter A. Beecher and H. W. Heedy, Youngstown. The Executive Committee comprises Henry Wick, Youngstown, and Jerome R. George and Paul B. Morgan, Worcester. The officers of the company are as follows: President, Charles H. Morgan; vice-president, Henry Wick; treasurer, Paul B. Morgan; secretary, Elmer J. Cutting, Worcester, and manager, Frank F. Bullard.

The bolt machinery at the Youngstown plant will be placed in operation early in the year, and it is expected that the mill for rolling wire rods will be started in February.

The new directors of the company are very well known in the iron trade. Henry Wick was vice-president of the National Steel Company and a director of the American Steel Hoop Company, now parts of the United States Steel Corporation. Warner Arms was third vice-president of the former American Tin Plate Company and a director of the National Steel Company. Walter A. Beecher is a prominent capitalist and was secretary of the Ohio Powder Company, now a part of the Dupont Powder Company, and H. W. Heedy is secretary and treasurer of the Andrews & Hitchcock Iron Company, Youngstown. R. B. Fowler, Worcester, is a prominent patent attorney.

Bridge Commissioner Best of New York City has appealed from the decision of Supreme Court Justice Dowling, who held that the contract made with the Pennsylvania Steel Company for the building of the Manhattan Bridge over the East River was void because it committed the city to a wasteful expenditure. It had been contended that the specifications were so drawn that the nickel-steel called for could be supplied by the Pennsylvania Steel Company only. The appeal is taken on the ground that the specifications were fair, that the nickel-steel called for is not a proprietary or patented product and that the extra cost of nickel-steel will be more than compensated for by its lightness and greater strength and durability.

Increasing Pig Iron Production.

The November Rate Exceeds That of October—More Furnaces in Blast.

The production of pig iron in the United States in November was 2,014,021 gross tons for the coke and anthracite furnaces, as against the record breaking total of 2,053,174 tons in October. The weekly capacity in blast on December 1 showed a gain of more than 14,000 tons over the active capacity in blast on November 1. While the actual production in November, a 30-day month, was less than that in October, the rate of production made a gain owing to the blowing in of additional furnaces, the number active on December 1 showing a net gain of 11 over the number in blast on November 1. Counting 30,000 tons a month for the output of charcoal furnaces, the rate of pig iron production on December 1, if maintained for a year, would give an output of a trifle over 25,000,000 tons. Needless to say, therefore, current production is at the highest rate ever attained.

The operations of the past month show that some of the smaller furnaces are now wheeling into line to respond to the tremendous demand for iron. A few furnaces have blown out since the opening of the month, but others are completing repairs and will soon go in. The open weather of recent weeks has been of vast consequence to the furnace interests. Interruptions from storms are to be looked for in the near future. The following table shows the production for November as compared with the four preceding months:

Monthly Pig Iron Production.

	July. (31 days)	August. (31 days)	September. (30 days)	October. (31 days)	November. (30 days)
New York....	91,839	102,090	102,419	111,503	113,098
New Jersey...	23,613	25,500	24,030	27,292	23,657
Lehigh Valley	51,092	46,329	47,044	53,028	53,245
Schuylkill Val.	35,569	34,372	37,120	40,390	36,929
Lower Susquehanna and Lebanon Val.	70,245	72,203	69,997	71,901	68,490
Pittsburgh dis.	467,026	488,119	449,632	495,379	466,457
Shenango Val.	109,753	137,181	151,804	169,388	165,876
West. Penn..	110,761	107,225	100,882	107,880	106,327
Md., Va. and Kentucky ..	73,235	76,975	77,230	81,539	84,209
Wheeling dis.	71,577	75,502	98,097	110,736	114,448
Mahoning Val.	120,284	126,274	153,758	166,465	154,363
Central and North. Ohio.	106,139	136,161	151,233	162,452	162,763
Hocking Valley and Hanging Rock	27,676	29,374	31,166	27,796	26,924
Ill.,Mich.,Minn., Wis., Mo. and Col.	224,011	221,542	242,733	251,864	267,210
Alabama	126,949	131,261	129,779	144,804	147,290
Tennessee, No. Carolina and Georgia	32,166	33,565	32,576	30,757	22,726
Totals ..	1,741,935	1,843,673	1,899,500	2,053,174	2,014,021

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also separately monthly figures of the production of spiegeleisen and ferromanganese, which is included in the total:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.—			Spiegeleisen and ferromanganese.	
	1903.	1904.	1905.	1904.	1905.
January	.....	502,994	1,129,042	6,673	21,002
February	.....	756,260	1,027,937	12,961	22,431
March	.....	913,412	1,232,255	23,128	21,280
April	966,850	974,006	1,222,710	29,145	20,038
May	1,037,325	927,534	1,287,438	25,755	24,732
June	1,021,839	788,822	1,149,404	24,950	21,761
July	987,855	694,892	1,114,409	27,284	31,220
August	993,564	747,570	1,186,050	19,280	27,461
September	956,363	936,494	1,262,033	20,723	21,645
October	829,213	971,447	1,370,960	13,669	26,799
November	553,067	962,384	1,334,644	13,442	23,776
December	406,730	1,019,841	.....	13,325	.....

Among furnaces blown in in November are Standish in New York, Temple and one Henry Clay in the Schuylkill Valley, Carbon in the Lehigh Valley, Rebecca in western Pennsylvania, West End in Virginia, No. 1 Ashland in Kentucky, one South Chicago (Calumet) in Illinois, one La Belle and Steubenville in the Wheeling district, Dover and Zanesville in Ohio, Marting and one Wellston in the Hanging Rock district, one Ensley in Alabama and Citico and Helen in Tennessee.

Among furnaces blown out in November are Detroit, one Edgar Thomson spiegel, No. 2 Ashland in Kentucky, La Follette and one South Pittsburg in Tennessee.

The table below gives the active capacity of the coke and anthracite furnaces on December 1 and November 1. It shows that the weekly capacity of such furnaces on December 1, based on their records in November, was 474,714 gross tons, as compared with a total of 460,449 tons weekly capacity on November 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	December 1. Number in blast.	December 1. Capacity per week.	November 1. Number in blast.	November 1. Capacity per week.
New York:					
Buffalo	12	12	24,431	11	23,436
Other New York...	10	3	2,154	2	1,743
New Jersey.....	8	6	5,520	6	6,003
Spiegel	2	1	183	1	203
Pennsylvania:					
Lehigh Valley.....	27	18	12,670	17	11,739
Spiegel	2	2	453	2	399
Schuylkill Valley..	13	9	9,079	7	8,771
Lower Susquehanna.	10	6	7,947	6	8,421
Lebanon Valley....	12	10	8,034	10	7,658
Pittsburgh district.	39	37	105,858	37	108,562
Spiegel	4	3	2,982	4	3,297
Shenango Valley...	21	19	38,704	19	38,598
West. Penn.....	24	17	25,393	17	24,136
Maryland	5	4	6,967	4	7,234
Wheeling district....	13	13	27,404	11	25,004
Ohio:					
Mahoning Valley...	16	15	36,018	15	35,234
Central and Northern and Mich...	19	18	39,028	17	38,241
Hocking Valley and Hanging Rock...	12	10	7,285	8	4,839
Illinois	20	17	42,989	16	36,917
Spiegel	2	2	1,467	2	1,500
Minnesota	1	0	0	1	1,183
Wisconsin	5	4	5,270	4	4,658
Missouri	1	1	1,033	1	876
Colorado	4	3	8,595	3	8,536
Spiegel	1	1	462	1	659
The South:					
Virginia	23	15	12,321	14	10,711
Kentucky	7	2	1,134	2	1,080
Alabama	46	30	34,438	29	33,934
Tennessee	16	11	6,895	11	6,878
Georgia	1	0	0	0	0
North Carolina....	1	0	0	0	0
Totals	377	289	474,714	278	460,449

For a series of months the active coke and anthracite capacity fluctuated as follows in gross tons:

	Capacity per week.		Capacity per week.
December 1, 1905.....	474,714	December 1, 1903.....	244,156
November 1.....	460,449	November 1.....	273,715
October 1.....	445,468	October 1.....	353,142
September 1.....	412,563	September 1.....	360,197
August 1.....	410,088	August 1.....	353,681
July 1.....	408,617	July 1.....	384,825
June 1.....	443,092	June 1.....	388,178
May 1.....	452,031	May 1.....	373,496
April 1.....	439,564	April 1.....	386,215
March 1.....	403,157	March 1.....	347,424
February 1.....	405,792	February 1.....	335,339
January 1, 1905.....	377,879	January 1, 1903.....	346,073
December 1, 1904.....	357,846	December 1, 1902.....	336,617
November 1.....	334,249	November 1.....	330,110
October 1.....	319,249	October 1.....	337,837
September 1.....	291,573	September 1.....	328,243
August 1.....	246,092	August 1.....	328,745
July 1.....	272,301	July 1.....	303,793
June 1.....	336,107	June 1.....	337,492
May 1.....	368,244	May 1.....	337,627
April 1.....	337,257	April 1.....	331,140
March 1.....	308,751	March 1.....	316,039
February 1.....	273,692	February 1.....	325,440
January 1, 1904.....	185,636	January 1, 1902.....	291,992

The Cleveland-Cliffs Iron Company, Cleveland, Ohio, has placed contracts with the Great Lakes Engineering Works, Detroit, Mich., for two 10,000-ton steel steamships, for delivery about next July.

OBITUARY.

WILLIAM CHISHOLM.

William Chisholm, for more than 20 years president of the Cleveland Rolling Mill Company, Cleveland, Ohio, died suddenly from apoplexy in that city December 6. He was born at Montreal, Canada, May 22, 1843. His father, Henry Chisholm, had emigrated from Scotland. In 1850 the family moved to Cleveland. William Chisholm, after spending four years in the Philadelphia Polytechnic College, went to Chicago as president and manager of the Union Rolling Mill Company, which his father had established in that city. In 1880, the father wishing to travel in Europe, William Chisholm returned to Cleveland to assume the management of the Cleveland Rolling Mill Company, which had been organized by his father in the '60s. The death of the senior in 1881 left William Chisholm as president and manager of the Cleveland Rolling Mill Company, which position he held until the plant was sold to the American Steel and Wire Company. Since then he had retired from active business, though he still retained his interest as vice-president of the Union Steel Screw Company, as director in the Lakeside & Marblehead Railroad Company, the Kelley Island Lime and Transport Company, the Riverside Foundry Company, the National Bank of Commerce and the Jackson Transit Company, besides holding stock in the Cleveland Electric Railway Company.

Never a public man in a political way, he took part in many philanthropic movements, and at the time of his death was president of the Cleveland Protestant Orphan Asylum. He was a member of the Second Presbyterian Church; also of the Country Club and of the Union Club. Besides his widow he is survived by a daughter and a son, Alvah S. Chisholm, assistant to the president of the American Steel and Wire Company.

CHARLES MULVEY of the Charles Mulvey Mfg. Company, Chicago, a veteran iron manufacturer, died December 3, aged 80 years. He was born in Ireland. He founded the Mulvey Iron Works about 20 years ago.

PHILIP W. SOUTHGATE of the firm of Southgate & Southgate, patent lawyers, Worcester, Mass., died December 6, aged 37 years. He was a graduate of the Worcester Polytechnic Institute, class of 1889, and after several years as an examiner of patents in the Patent Office entered the National University, where he took his degree. He was well known among machine tool manufacturers, having been associated in the trial of several cases having an important bearing on their products.

HENRY R. SLOAT, assistant secretary and treasurer of the Tennessee Coal, Iron & Railroad Company, with which he had been connected for ten years, died suddenly December 11, at his home near Suffern, N. Y., aged 70 years.

JAMES M. PEARSON, hardware purchasing agent for the American Felt Company, died December 2, after a brief illness, of pneumonia, at his residence in New York City. He was 46 years of age and was well known to the hardware trade, having been connected with it for 25 years. He had been engaged in the capacity of purchasing agent for this branch of the business with the American Felt Company since its incorporation, in 1899, and had won a high reputation for capability and good judgment. His widow survives him.

EDWARD ATKINSON, the famous publicist, economist and statistician, died suddenly December 11, of acute indigestion, at his home in Boston, aged 78 years. He was born in Brookline, Mass., and began his career in the mercantile line, became financial officer of several manufacturing companies and in 1877 was made president of the Manufacturers' Mutual Fire Insurance Company, which he helped to organize and with which he had since then been connected in the same official capacity.

SAMUEL S. BROWN, probably the largest individual coal operator in the Pittsburgh district, died at his residence in Pittsburgh, December 11. He was a large stockholder in the Monongahela River Consolidated Coal & Coke Company, and was president of the Brown Hoisting Machinery Company of Cleveland; also of the Arkansas River Packet Company and of the Pittsburgh Coal Exchange. He was also heavily interested in the Cairo Coal Company, Cairo, Ill.; president of the Monongahela River Packet Company, operating a line of boats between Pittsburgh and Morgantown, W. Va., and also president and principal stockholder in the Pittsburgh & Homestead Bridge Company. He was further a director in several banks in Pittsburgh; also in the Consolidated Ice Company, and was largely interested in other enterprises.

The Pittsburgh Foundrymen's Association.

The regular monthly meeting of this organization should have been held in Pittsburgh December 4, but owing to the fact that no papers had been prepared the meeting was adjourned for one week. Instead of holding a regular session the members of the association made a visit to the Carnegie Technical Schools, now in course of construction in Pittsburgh. The visit was preceded by a dinner at the Hotel Henry, at which about 150 members attended. At the schools a thorough trip of inspection was made, under the guidance of Professors Hammerschlag and Connelly. The buildings are still incomplete, but one structure is partly finished and occupied by the School of Applied Science, which numbers 464 day and night pupils.

The buildings are of steel and brick construction and are equipped with everything obtainable for the safety and comfort of the pupils. Particular attention was paid by the visitors to a miniature foundry which is partly finished and is already equipped with a Whiting cupola of 8 tons capacity, but which will not be charged to the extent of more than 2 tons. Core ovens are to be added. The foundry will be used for the purpose of illustrating modern foundry methods and the good castings made will be used by the pupils in other departments in the building of engines and other equipment. Imperfect castings will be remelted in the cupola. The power plant is partly finished and there is already installed a 150 horse-power Westinghouse gas engine directly connected to a 75-kw. generator. There is also being installed in the power building a 500 horse-power Westinghouse horizontal gas engine of a new type, which will be directly connected to two 75-kw. generators.

The trade schools have not yet been started, owing to the incomplete condition of the buildings, but these are expected to be started on January 23, and applications from pupils will be received January 8. The foundrymen were greatly impressed with the importance of the project, and it was the universal opinion that the Carnegie Technical Schools when fully completed and in operation will be a magnificent institution. Applications by the hundreds have been received from intending pupils, from which selections have been made very carefully. After the tour of inspection the members of the party adjourned to the assembly hall, where a glee club rendered several selections, after which an address was made by Professor Hammerschlag, director of the schools. He pointed out to the foundrymen how they could co-operate with the schools and assist in turning out the very best workmen.

The new steel lake freighter named in honor of Joseph G. Butler, Jr., of Youngstown, Ohio, has already made two trips, which is a remarkable record for a boat of this size, the construction of which was commenced only in September last. On the first trip the boat carried 350,000 bushels of wheat and on the return trip took 10,000 tons of coal from Ashtabula to Duluth. After this coal has been unloaded the boat will go out of commission until navigation opens in the spring.

The Technical Publicity Association, whose members are the advertising managers of machinery and electrical manufacturers east of Ohio, dined and held an open meeting at the Aldine Association, 111 Fifth avenue, December 8. George H. Gibson, a former secretary of the association, made an address on "Lost Motion in Machinery Advertising," which was followed by an informal discussion.

NEWS OF THE WORKS.

Iron and Steel.

The Riter-Conley Mfg. Company, Pittsburgh, has secured the contract for the iron work for the new blast furnace to be built by the Midland Steel Company of Pitsburgh, at Cook's Ferry, near Beaver, Pa. George W. McClure, Son & Co., Bessemer Building, Pittsburgh, are doing the engineering work and will install McClure hot blast stoves at this plant.

Julian Kennedy, consulting engineer, Pittsburgh, is designing a new blast furnace for the Federal Furnace Company, to be built at South Chicago. The stack will be 18½ x 75 feet and will have a daily capacity of about 250 tons. Mr. Kennedy is also designing furnace B for the North Western Iron Company, at Mayville, Wis. This furnace will be 17 x 77 feet and will have three hot blast stoves.

It is expected that the Humbert works of the American Sheet & Tin Plate Company, at Connellsville, Pa., which has been idle for some time, will be started January 8. The plant contains six hot and six cold mills, the product being tin and terne plates and the annual capacity about 13,500 gross tons.

Steubenville Furnace, Steubenville, Ohio, which was transferred recently from the National Tube Company to the Carnegie Steel Company, was blown in on November 17.

The E. & G. Brooke Iron Company, Birdsboro, Pa., blew out its one active furnace December 6. The other stack will be blown in December 15.

The Pennsylvania Swedish Iron Company, which is erecting a plant at Cheswick, Pa., expects to have eight knobbling fires in operation early in January. It will make charcoal blooms and has already sold a good deal of tonnage.

General Machinery.

The Minneapolis office of the American Bridge Company, New York, has received an order from the Oliver Iron Mining Company for the erection of a machine shop, 60 x 100 feet, at Ishpeming, Mich., for the use of the latter company's Lake Superior mines. The shop will be equipped with the latest tools, traveling cranes, &c. Edward E. Green is contracting manager of the Bridge Company at Minneapolis.

The United Iron Works Company, Springfield, Mo., is building new machine shops and foundry at Aurora, Mo. The new plant includes a machine shop, 80 x 105 feet; boiler house, 30 x 30 feet; foundry, 40 x 65 feet; blacksmith shop, 25 x 35 feet; office, 20 x 40 feet; storage house, 30 x 40 feet, and fuel building, 12 x 30 feet. No new equipment will be required, as the machinery will simply be transferred from the old plant at Aurora. This company operates six plants, two at Springfield and one at Aurora, Mo.; one at Iola, one at Pittsburg, and one at Cherryvale, Kan.

The Northern Engineering Works, crane builders, Detroit, Mich., has been awarded the contract for the electric cranes required in the new steel casting foundry of the Monarch Coupler Company, Limited, Detroit, Mich. There will be one 25-ton, four-motor electric ladle crane, 50-foot span; one 10-ton, four-motor standard crane, 50-foot span. The company has recently completed installing three electric traveling cranes in the plant of the Detroit Steel Casting Company, consisting of one 30-ton four-motor ladle crane, 70-foot span, and two 10-ton three-motor electric cranes, 70-foot span, and is now constructing for the same company a 10-ton 80-foot electric gantry crane for yard service.

The Macbeth Iron Company, Cleveland, Ohio, has received an order from the Pennsylvania Railroad for four of its "Swedenborg" grab buckets of 1½ tons capacity of iron ore for use on the Pennsylvania ore docks at Sandusky, Ohio. In addition to furnishing these buckets the Macbeth Iron Company will rebuild the Excelsior derricks now on this dock and equip them for the operation of grab buckets.

The Cleveland Crane & Car Company, Wickliffe, Ohio, has recently secured a very large order for six heavy pipe foundry cranes for the American Cast Iron Pipe Company, Birmingham, Ala., also among other orders one for a large gantry crane for the Missouri Pacific Railroad yards at St. Louis, Mo.

The B. F. Sturtevant Company, Hyde Park, Mass., has recently received orders from the Hollingsworth & Vose Company, West Groton, Mass., for a large standard staggered pipe economizer with induced draft apparatus; Singer Mfg. Company, Elizabethport, N. J., staggered pipe economizer; Arnold Print Works, North Adams, Mass., blower system; National Tube Company, McKeesport, Pa., heating and ventilating equipment; Canadian Fairbanks Company, Toronto, Ont., separate heating and ventilating apparatus for machine shop, blacksmith shop and foundry; Brown & Sharpe Mfg. Company, Providence, R. I., heating and ventilating apparatus; Pressed Steel Car Company, McKees Rocks and Allegheny, Pa., shops, heating and ventilating equipment; Studebaker Bros. Mfg. Company, South Bend, Ind., fan system heating and ventilating; Charles E. King, Brooklyn, N. Y., and Old Colony Street Railroad Company, Quincy Point, Mass., generating sets; Lukens Iron & Steel Company, Coatesville, Pa., mechanical draft apparatus; James T. & W. S. Pyle, Edgewater, N. J., mechanical draft apparatus; W. H. Choate Mfg. Company, Wilmington, Del., ventilating, heating and dry kiln apparatus; Piermont Paper Company, Piermont, N. Y., ventilating apparatus; Montreal Street Railway, heating and induced draft apparatus; Inter-Colonial Railway, Truro, Nova Scotia, heating and ventilating system; Spanish Pulp & Paper Company, Espanola, Ont., blower, heating and ventilating system.

The Palmer-Bee Company, Detroit, Mich., has succeeded to the transmission, elevating and conveying machinery department of the Pittsburgh Shaft Company and will direct its best energies to the promotion of the well established department of its predecessors. The officers of the Palmer-Bee Company have been associated with the Pittsburgh Shaft Company practically since its inception.

Power Plant Equipment.

Henry Newgard & Co., Chicago, have been awarded contract at $5311 for the construction of a lighting plant at the court house and jail, Galesburg, Ill. The company will use a Crocker-Wheeler generator and a Frost Mfg. Company's engine in this work.

The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., has obtained the first of a series of contracts for the electrification of the street railroad system of St. Petersburg, Russia. The contract amounts to about $600,000 and covers the cables only. The complete work will cost about $5,000,000.

The Kennicott Company, Chicago, has built at the Duquesne Steel Works of the Carnegie Steel Company a water softening plant with a daily capacity of 3,600,000 gallons.

The Parral Power & Lighting Company, Parral, Mexico, has placed a contract with the New York engineering and contracting firm of Mackenzie, Quarler & Ferguson for three Harrisburg-Fleming tandem compound four-valve engines of 360 horse-power each, to be direct connected to 240-kw. General Electric alternating current high voltage generators. These outfits are to be used for both light and power purposes.

The New York export firm of Bolton Brothers has ordered a 600 horse-power Harrisburg-Fleming engine arranged for direct connection to a 400-kw. generator of General Electric build, for Brazil.

Foundries.

The Sharon Foundry Company, Sharon, Pa., advises us that it has been delayed in getting its machinery installed for its new furnace to make steel castings, but expects to make its first steel casting during this week.

Samuel W. Hay's Sons, Farmers' Bank Building, Pittsburgh, dealers in foundry equipment, have secured the contract to furnish and erect complete equipment for the model foundry at the Carnegie Technical Schools. This contract includes a 7-ton Whiting cupola, with structural steel charging platform of 2000 pounds capacity; Whiting foundry elevator with Rennold chain drive to Westinghouse motor, and No. 6 Sturtevant steel pressure blower with Morse chain drive to 15 horse-power motor.

M. J. Drummond & Co., New York, who recently secured the cast iron pipe works of the Reading Foundry Company, in North Reading, Pa., have started operations under the name of the Drummond Works.

William Lodge and associates, who are to erect a steel casting plant at Cincinnati, Ohio, have incorporated the Steel Foundry Company with a capital stock of $100,000 to build and operate the works.

The Chailingsworth Foundry & Machine Company has been organized at Mt. Vernon, Ohio, with a capital stock of $150,000. The company will erect a foundry at Mt. Vernon and will make gray iron castings up to 30 tons, as well as brass and bearing metals. It is the intention also to erect an air furnace to be equipped to make air furnace and semisteel castings. Ben Ames, Mt. Vernon, Ohio, is interested in the company.

Negotiations are pending for the sale of the Grand Rapids Malleable Company, Grand Rapids, Mich. It is understood that the deal is now near culmination, although the papers have not yet been signed. Edward Lowe is president of the company, D. M. Ray is secretary, and H. J. Hollister is treasurer.

The Dain Mfg. Company, Ottumwa, Ia., is building a new foundry, one story, 68 x 160 feet. This company manufactures agricultural machinery.

Bridges and Buildings.

Wm. B. Scaife & Sons Company, Pittsburgh, Pa., has received a contract from the Pittsburgh Railways Company for a steel frame trestle and viaduct 455 feet long and varying from 30 to 101 feet high, with girder spans from 26 to 90 feet. The trestle is to be erected over Lowry's Run, near Emsworth, Pa.

Fires.

The blacksmith shop of the Union Dry Dock Company, Buffalo, N. Y., was destroyed by fire December 8, with considerable machinery. The loss is about $10,000.

The finishing plant of the Harriman Hoe & Tool Company, Harriman, Tenn., was destroyed by fire December 6. The loss is about $50,000.

On December 8 an explosion did about $100,000 damage to the plant of the Washington Gas Light Company, Washington, D. C.

Keuffel & Esser's factory at Hoboken, N. J., was seriously damaged by fire on December 8.

The foundry of the West Moreland Specialty Brass Company, Grapeville, Pa., was recently destroyed by fire. The loss is about $10,000.

Hardware.

The Marshalltown Trowel Company, Marshalltown, Iowa, will erect a new building, three stories, 50 x 70 feet. The company manufactures trowels, aluminum hawks and darbies, and its business has grown to a point where the present building affords insufficient room for the prompt handling of orders. The officers of the company are: J. C. Williams, president; E. L. Williams, vice-president, and A. Higgin, secretary and treasurer.

The Keystone Fence Company, Peoria, Ill., has increased its capital stock from $250.000 to $350,000. The company is gradually enlarging its plant at South Bartonville, a suburb of Peoria.

The Novelty Mfg. Company, Jackson, Mich., has been reorganized with $200,000 capital stock and has purchased that part of the plant and machinery of the Metal Stamping Company of Jackson pertaining to the manufacture of oil stoves, ovens, steel registers and hardware specialties. The Metal Stamping Company will erect a new factory in the early spring for the manufacture of its White Frost refrigerators. The two companies, while independent of each other, are both under the presidency and management of Hugh L. Smith, one of the pioneer oil stove men in the country.

Miscellaneous.

The Palace Motor Car Company has been incorporated at Buffalo, N. Y., with a capital of $15,000, to engage in the manufacture of motor cars. The directors are Charles F. Bensing, Nathan Dougherty and Charles E. Shaw.

The Youngstown Pressed Steel Company, recently organized at Youngstown, Ohio, has elected the following officers: L. E. Cochran, president; Mason Evans, treasurer; Chauncey A. Cochran, secretary, and John O. Pew, general manager. The company will manufacture pressed steel for agricultural implements.

The Babcock Electric Carriage Company, Buffalo, N. Y., recently incorporated, has purchased the Buffalo Electric Carriage Company, and with increased capital will increase the output for the year 1906 to 500 vehicles. Two or three new models will be ready for the spring trade. F. A. Babcock is president; F. L. Bapst is vice-president, and E. R. Whitney secretary and treasurer.

The Howarth & Rogers Company, Amesbury, Mass., whose carriage and automobile body manufacturing plant was recently destroyed by fire, has purchased another plant near the site of the old one and will continue the business. The new plant will be operated by electricity and the company will install motors to the capacity of about 55 horse-power. It is likely that some machinery will be purchased soon.

Thompson McCosh, Burlington, Iowa, president of the McCosh Steel Company, is interested in the establishment of a new city to be called Ferrodale. The site contains 1400 acres of land and borders the Santa Fé Railroad tracks on one side. A steel plant and other industrial works are contemplated. The location has many natural advantages.

Ricca & Son, New York, piano manufacturers, are to build a two-story and basement brick factory, 80 x 95 feet, the estimated cost of construction of which is $26,000. A little wood working machinery is all that the firm will have to buy for equipping the new building. The power equipment has been secured.

The American Scrap Iron Company, Akron, Ohio, owing to greatly increased business and inadequate present facilities, has purchased a new yard at 30 West State street, Akron. This property is now being fitted up, a railroad track scale of 100 tons capacity is being installed, and other improved machinery is being put in for the handling of scrap with the greatest facility.

The American Can Company is tearing down a warehouse at its Maywood (Ill.) plant and will replace it with a factory for the manufacture of fruit cans. The building will be 225 x 300 feet. All machinery for its equipment is manufactured in the company's own plants. The company a short time ago purchased a large factory site in Chicago at Kingsbury and Illinois streets. The property has excellent track facilities and will doubtless ultimately be improved with a modern plant, but no plans have yet been perfected in this direction, according to the statement of one of the officers of the company at Chicago.

The Corrugated Culvert Company, manufacturer of corrugated galvanized steel culverts, sewers, well curbing and tornado caves, has established a plant at Guthrie, Okla., which has the exclusive right to make and sell the culverts in Oklahoma and Indian Territory. Five thousand dollars has been expended on a new plant. The manager of the company is E. M. Pyle, who is associated with his brother, E. W. Pyle, in the control of the plant. The Messrs. Pyle were formerly with this company at Emporia, Kan. Much of the business of the company is with railway companies and county and city governments for improving roads with steel culverts. The plant at Guthrie will employ about 12 men at the start, and in the spring six traveling men will be sent out.

The Waterous Engine Works Company, Limited, Brantford, Canada, is building an addition, three stories, 45 x 215 feet, which will be used as a pattern storage room.

The Connellsville Coal & Coke Company expects to start this week about 100 ovens at its plant near Masontown, Pa. The company is building 240 ovens in all, which are expected to be completed within a month.

The French Mfg. Company, Waterbury, Conn., recently incorporated with a capital stock of $25,000, of which $10,000 is already paid in, has let contract for the construction of a brick factory, 40 x 80 feet, which will be equipped for the manufacture of seamless tubing in the small sizes. The company expects to be ready for business by March 1, and will require a boiler and engine of about 25 horse-power to operate the plant. F. W. French is president and L. R. Carter secretary and treasurer.

Edwards & Co., electricians, 405 to 409 East 144th street, New York, will build a four-story frame factory, 40 x 90 feet, on Exterior street and Cheever place.

Among contracts received this year by the Driggs-Seabury Ordnance Company, Sharon, Pa., from the War Department was one for 116.000 1-pounder large capacity steel shells, one experimental 6-pounder gun and mount, 368 3-inch field limbers, model of 1902. The 6-pounder mount and gun are being delayed by lack of steel castings and the date of delivery cannot be safely predicted. No deliveries have been made on the 3-inch field caissons and limbers, the date of final deliveries for which are as follows: Limbers, October 14, 1906; 164 caissons, August 6, 1906.

Electrically Operated Valves for the Cincinnati Filtration Plant.—An order for 149 electrically operated valves, to be installed in the Cincinnati filtration plant, has been placed with the Fairbanks Company, Elm and Broome streets, New York City, and the valves are being manufactured in the plant of the Pratt & Cady Company, Hartford, Conn. This order, it is claimed by the Fairbanks Company, is the largest of the kind ever given, and the valves, which are specially designed, will be particularly complete. They will be installed in 29 chambers and electrically operated from the floor above. There will be nine valves in the head chamber and five in each of the others. They will be geared to the floor stand on which is mounted the motor. The valves will be arranged so that they can be controlled from a distant point, and there will also be a switchboard in each chamber on which will be mounted the controlling device to open and close the valves, which will be designed to take care of overload and underload, at any point. The motors will be made by the Crocker-Wheeler Company, Ampere, N. J., and the controlling device will be manufactured by the Cutler-Hammer Mfg. Company, Milwaukee, Wis. There will be 106 sluice valves installed in the plant, and the contract for these has been awarded to the Coffin Valve Company, Boston, Mass. The first of the valves will be installed next spring.

Large Shipment of Plate Girder Bridges.—What is said to be the largest single shipment of plate girder bridges ever made went forward December 9 from the Rankin plant of the McClintic-Marshall Construction Company at Rankin, Pittsburgh. The shipment consisted of an entire train of 56 cars loaded with 44 deck plate girders, each 80 feet long, 8 feet high and weighing 20 tons each, and will go through direct to its destination, Freemont, Neb., as a solid train, via the Pittsburgh & Lake Erie, Lake Shore & Michigan Southern and Chicago, Burlington & Quincy railroads. These girders are for the Platte River Bridge, on the line of the Great Northern Railroad, which will require 72 girders of the above length. The McClintic-Marshall Construction Company has nearly completed its new shop, No. 2, at Rankin. This new shop is about the size of the old one and will more than double the capacity of that plant. Taken in connection with the plant at Pottstown, Pa., it gives the company twice the capacity of any other structural shop in the country outside of the American Bridge Company.

The blast furnace of the Detroit Iron & Steel Company went out for relining November 25. It will probably be put in blast again early in January.

President Roosevelt in Washington pressed the key which opened the electrical show in Madison Square Garden, New York, on Tuesday evening.

The Iron and Metal Trades

The Lake Superior Ore market has furnished in the past week one of the most remarkable developments of this record-breaking year. At the end of the first week in December, with cargoes of 1905 Ore still coming down the lakes, it was authoritatively estimated that nearly 90 per cent. of the merchant Ores to be mined for 1906 had been sold. Careful computation also shows that counting in the Ore of consumers having their own mines and of consumers receiving Ore on long time contracts there has now been placed 96 per cent. of all the Lake Ore available for next year. An output of 36,000,000 to 37,000,000 tons is now figured on for 1906, and of this only about 1,000,000 tons is still for sale.

Complete returns from the shipping ports show that the water shipments this year aggregated 33,473,761 tons. Adding all-rail shipments this indicates total shipments for the current year of 34,100,000 gross tons, a record output, which compares with the maximum of 27,571,121 gross tons in 1902 and an average of 23,500,000 tons for the past four years.

Pig Iron production is now on the basis of over 25,000,000 tons per annum. Our statistics for the month of November show that for that short month the production of anthracite and coke Iron amounted to 2,014,021 gross tons, against 2,053,174 tons in October, a month of 31 days. Adding as a conservative estimate a monthly production of 30,000 tons of charcoal Iron, the annual rate given above is reached. In November the Steel companies contributed 1,334,644 tons to this total.

The event of the week is the announcement that the Cambria Steel Company has purchased 60,000 tons of Bessemer Pig for forward delivery on the basis of monthly average prices. While the Steel Corporation has not yet bought its requirements for the first quarter it is understood that the metal will be available.

So far as can be learned there is no truth in the cabled reports from England of purchases there for American account of 25,000 tons of Bessemer Pig for consumption here. The only Steel maker in this country likely to handle such a quantity denies such a transaction, which, too, is unlikely, because the prices abroad are above the parity here. The report is regarded as a bull canard.

A feature of the situation in Manganiferous Material is the purchase by the Steel Corporation of between 25,000 and 30,000 tons of Spiegeleisen. The Ferromanganese market shows annoying variations in prices.

The Steel situation is growing serious with increasing scarcity. Our Chicago correspondent reports that one large interest in that district estimates a shortage of 15,000 tons per month. The leading interest in the Central West is unable to operate as much finishing capacity as desired because the supply of Sheet and Tin Plate Bars is inadequate. In the East mills which until now were running on $23 and $24 Steel must face the question of buying new supplies at close to $30.

The lake shipbuilders have received orders for six large carriers, two of them being 12,000-ton boats, for the Steel Corporation and two being for the Cambria Steel Company and two for the Cleveland Cliffs Iron Company.

In the Rail trade the only large transaction in the domestic market is a lot of 15,000 tons for Morgan's Louisiana & Texas Railroad. For the international markets and as possibly affecting our own mills there are two interesting orders at hand from Canada which aggregate about 85,000 tons. It is pretty certain that the Canadian mills will not be able to take any part of this business because they cannot meet the deliveries.

In the Structural branch the leading contract of the week has been that for the Pennsylvania depot and power house, aggregating 25,000 tons. The principal sugar refining interest has purchased 15,000 tons for Southern delivery.

All reports agree that the volume of business coming to the Wire mills is exceptionally heavy. Instead of beginning to stock up for the spring trade, the mills are still forced to ship from stock. The Tin Plate and Sheet mills, too, are very busy.

New bids are being called for, to be in on December 22, for the 30,000-ton lot of Cast Iron Pipe for this city. The local gas company is to open bids to-day for a large quantity of Pipe.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec.13, 1905.	Dec.6, 1905.	Nov.15, 1905.	Dec.14, 1904.
PIG IRON:				
Foundry No. 2 Standard, Philadelphia	**$18.25**	$18.25	$18.00	$17.00
Foundry No. 2 Southern, Cincinnati	16.75	16.75	16.75	15.75
Foundry No. 2, Local, Chicago	**19.25**	19.25	19.00	16.50
Bessemer, Pittsburgh	**18.35**	18.35	17.85	16.85
Gray Forge, Pittsburgh	**17.10**	17.10	16.60	15.85
Lake Superior Charcoal, Chicago	**20.00**	20.00	19.50	17.50
BILLETS, RAILS, &c.:				
Bessemer Billets, Pittsburgh	26.00	26.00	26.00	21.00
Forging Billets, Pittsburgh	30.00	30.00	30.00	25.00
Open Hearth Billets, Phila	**30.00**	30.00	29.50	....
Wire Rods, Pittsburgh	**32.50**	32.50	32.00	30.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	16.50	16.50	16.50	15.50
O. Steel Rails, Philadelphia	18.25	18.25	18.25	16.00
O. Iron Rails, Chicago	23.00	23.00	23.00	22.00
O. Iron Rails, Philadelphia	**24.50**	24.50	24.00	20.50
O. Car Wheels, Chicago	**19.00**	18.00	17.50	16.50
O. Car Wheels, Philadelphia	**17.50**	17.50	17.00	14.50
Heavy Steel Scrap, Pittsburgh	*17.50*	18.00	18.00	16.00
Heavy Steel Scrap, Chicago	15.25	15.25	15.25	14.25
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.83½	1.83½	1.83½	1.63½
Common Iron Bars, Chicago	1.85	1.85	1.85	1.65
Common Iron Bars, Pittsburgh	**1.90**	1.90	1.84¾	1.54½
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.44½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.30
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.54½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.40
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.54½
Beams, Pittsburgh	1.70	1.70	1.70	1.40
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.54½
Angles, Pittsburgh	1.70	1.70	1.70	1.40
Skelp, Grooved Steel, Pittsburgh	1.55	1.55	1.55	1.40
Skelp, Sheared Steel, Pittsburgh	1.65	1.65	1.65	1.50
SHEETS, NAILS AND WIRE:				
Sheets, No. 27, Pittsburgh	**2.20**	2.20	2.15	2.10
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.75
Cut Nails, Pittsburgh	**1.70**	1.70	1.65	1.75
Barb Wire, Galv., Pittsburgh	2.25	2.25	2.25	2.20
METALS:				
Copper, New York	**19.00**	18.00	16.62½	14.87½
Spelter, St. Louis	**6.40**	6.40	6.00	5.70
Lead, New York	**6.00**	5.90	5.50	4.60
Lead, St. Louis	**5.75**	5.75	5.25	4.55
Tin, New York	**36.00**	35.10	33.25	29.10
Antimony, Hallett, New York	**13.00**	13.00	12.50	9.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	**3.59**	3.59	3.49	3.64

Chicago.

FISHER BUILDING, December 13, 1905.—(*By Telegraph*).

The present lull in the demand for both Pig Iron and Finished Material is not relieving the pressure on furnaces and Steel works, and therefore the market generally is without loss of strength. To many consumers the check in the upward movement of Pig Iron values is taken as foreshadowing a softening of prices and unplaced first quarter requirements are not being closed pending developments. The large unfilled tonnage on the books of furnace operators, however, precludes the probability of lower prices in the immediate future, and with the advent of winter, which invariably curtails production and delays shipments, it is believed that still higher prices will prevail. Steel shortage at Western finishing mills is growing acute, nor is there any relief in sight from Eastern producers, whose output is inadequate to meet the demands of their finishing departments and general trade. One large Western Steel interest reports a monthly shortage of 15,000 tons of Billets and other mills are short in proportion. Steel works furnaces are being operated at their capacity, the Illinois Steel Company having 17 of its 19 available stacks in operation, and Furnace No. 1 at the North Works, which heretofore has been used as an alternate stack, will be blown in shortly. Practically the entire Rail tonnage booked for this year's delivery has been rolled and the local mill has commenced on 1906 contracts. The Chicago, Milwaukee & St. Paul Railroad, whose Rail requirements next year amount to 125,000 tons, to be used largely in extending this line to the Pacific Coast, has already placed heavy specifications with the mills, and other roads are like-

wise urging the early delivery of their requirements. This is the first time in the history of the Western Rail trade that shipments of the next year's requirements have been demanded during the last month of the closing year, and this anticipation of deliveries is an indication of the pressure on all mills. Contracts for the Plate and Shape requirements for three additional lake vessels aggregating 7000 tons are under negotiation and will probably be closed this week. The continued open weather is favorable to the heavy consumption of Wire products and large contracts continue to be placed at this ordinarily unseasonable period. The strength of the situation is further reflected in the Scrap market. Consumers generally have covered their requirements through the winter months, but the railroad offerings are eagerly sought for by dealers who are accumulating heavy stocks in anticipation of a big future demand and higher prices. The car shortage continues to delay mill shipments, although the movement of Coke from the Connellsville and Virginia fields is unusually heavy.

Pig Iron.—The market continues quiet and sales are limited to small lots for immediate requirements. Consumers who have not yet covered for the first quarter are holding off in anticipation of lower prices, but the well filled order books of furnace operators are unfavorable to a softening in values in the future. During the week $14.50, Birmingham, was shaded on No. 2 Foundry, but notwithstanding this concession other sales have been made on the basis of $15. The open weather has been unusually favorable to blast furnace operations and production and consumption are more equally balanced than in the Steel trade. The Sloss-Sheffield Steel & Iron Company has abolished the differential of 25c. a ton heretofore existing between Birmingham and Sheffield brands in favor of the latter, placing them on an equal trade basis. Northern Foundry continues to be offered at $19, furnace, equivalent to $19.25 to $19.50, Chicago. We continue Chicago quotations as follows:

Lake Superior Charcoal	$20.00 to $20.50
Northern Coke Foundry, No. 1	19.75 to 20.00
Northern Coke Foundry, No. 2	19.25 to 19.50
Northern Coke Foundry, No. 3	18.75 to 19.00
Northern Scotch, No. 1	20.00 to 20.50
Ohio Strong Softeners, No. 1	20.05 to 20.30
Ohio Strong Softeners, No. 2	19.55 to 19.80
Southern Coke, No. 1	18.65 to 19.15
Southern Coke, No. 2	18.15 to 18.65
Southern Coke, No. 3	17.65 to 18.15
Southern Coke, No. 4	17.15 to 17.65
Southern Coke, No. 1 Soft	18.65 to 19.15
Southern Coke, No. 2 Soft	18.15 to 18.65
Southern Gray Forge and Mottled	16.65 to 17.15
Malleable Bessemer	19.50 to 20.00
Standard Bessemer	19.30 to 19.55
Southern Basic	18.65 to 19.15
Jackson Co. and Kentucky Silvery, 6 %	18.80
Jackson Co. and Kentucky Silvery, 8 %	20.80
Jackson Co. and Kentucky Silvery, 10 %	22.30

Metals.—There is a pronounced scarcity of both Lead and Copper, and the alleged official prices on Lead no longer apply on immediate deliveries. Further advances have been made and still higher prices are anticipated on both products. We quote: Casting Copper, 19½c. to 19¾c.; Lake, 19½c. to 20c.; Pig Tin, car lots, 37c. to 37½c.; small lots, 38c. to 38½c.; Spelter, prompt delivery, 6½c. to 6¾c., for car lots; Lead, Desilverized, 5⅞c. to 6c.; Corroding, 6¼c. to 6½c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is $7.75 list, f.o.b. Lasalle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 16c.; Heavy Copper, 15¾c.; Copper Bottoms, 15c.; Copper Clips, 15¾c.; Red Brass, 15c.; Red Brass Borings, 11½c.; Yellow Brass, Heavy, 11c.; Yellow Brass Borings, 9¾c.; Light Brass, 8½c.; Lead Pipe, 5c.; Tea Lead, 4½c.; Zinc, 4.85c.; Pewter, No. 1, 22c.; Tin Foil, 28c.; Block Tin Pipe, 27½c.

(By Mail.)

Billets.—Western producers and consumers are short of Rolling Billets, the leading interest continuing short of both Bessemer and Open Hearth about 15,000 tons a month. Rolling Billets are no longer offered in this market except at prohibitive premiums and the production of Finished Material is necessarily proportionately curtailed. Forging Billets are still to be had for prompt shipment in small quantities on the basis of $34 and $35 flat, f.o.b. Chicago.

Rods.—Independent interests are now placing heavy contracts for their requirements during the first half of next year. On account of the tremendous consumption of wire products a shortage of Rods is anticipated during the spring months, when the requirements will be much heavier than they are at present. Consumers of Chain Rods covered their requirements some time ago. We quote Wire Rods at $33, f.o.b. Pittsburgh, with full freight to point of destination, and Chain Rods at $35, f.o.b. Pittsburgh.

Rails and Track Supplies.—For the extension of its system to the coast the Chicago, Milwaukee & St. Paul Railroad has purchased in two lots a total of 125,000 tons of Rails for delivery in 1906. Specifications for this material are already being received and shipments will go forward before the first of the year. Practically all of this year's tonnage of Heavy Sections has been rolled and the local mill has already commenced on 1906 requirements for several roads. This is the first time in the history of the Western Rail trade that rolling was commenced on the following year's requirements during the last month of the preceding year. As the local mill has booked orders exceeding its capacity nearly 10,000 tons a month during the first nine months next year, it can readily be seen that it is absolutely necessary to begin rolling at this time. The addition to the finishing department of the Rail mill will be completed shortly after the first of the year and the output will thereby be increased about 5000 tons a month. At Joliet, Ill., the capacity of the Splice Bar mill is being considerably increased to take care of the heavy tonnage placed for next years' delivery. The capacity of the Spike and Bolt departments is also being materially increased. Demand for Light Rails continues heavy notwithstanding last week's advance. Quotations are unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 1.85c. to 1.95c.; Track Bolts, 2.50c. to 2.60c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 lb. to 45 lb. Sections, $27 to $27.50; 25-lb., $28 to $28.50; 20-lb., $29 to $29.50; 16-lb., $30 to $30.50; 12-lb., $31 to $31.50; lighter Sections down to 8-lb., $36 to $40, f.o.b. mill. Standard Sections are quoted $28, f.o.b. mill, full freight to destination.

Plates.—Plate requirements for three additional lake steamers are now under negotiation and will probably be placed within a week, aggregating nearly 5000 tons of material. Plate specifications continue heavy, although new business is somewhat less than shipments and mills are now in position to promise reasonably prompt deliveries. Quotations are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and head quality, 25c. extra.

Bars.—The demand for both Iron and Steel Bars from store is unusually heavy on account of the inability of the mills to make prompt shipments. Jobbers in position to divert shipments of car lots of Steel Bars readily secure an advance of $2 a ton over prevailing quotations. Specifications are greatly in excess of mill shipments and deliveries continue to fall behind. While some Iron Bar tonnage is being closed on the basis of 2c., independent mills are securing the bulk of the tonnage at prices ranging from $2 to $3 a ton lower. Iron Bars, 1.85c. to 2c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.01½c., extras as per Hoop card; Bands, 1.66½c.; as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras, and Hard Steel Angles and Bars are now quoted on practically the same basis as Soft Steel. Store prices are as follows: Bar Iron, 2.20c. to 2.25c.; Soft Steel Rounds and Squares, 2 inches and larger, 2c., base; Flats, 2 and 4 inches by 1⅛ inch and thicker, 2c., base; Flats, 4½ x 5 inches and 6 x 5-16 inch and thicker, 2c.; all Ovals, Half Ovals and Half Rounds, 2c.; Steel Bands are held at a minimum of 1.95c. to 2c., half extras; Soft Steel Hoops, 2.30c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Sheets.—New business continues extremely light, which is due to the heavy contracts placed by consumers before the recent advance became effective. Independent mills are rigidly adhering to the new basis and concessions of $1 a ton, recently reported, have been generally withdrawn. Mill specifications are very heavy, and considering the general strength of the market there is every indication that consumers will take out the entire tonnage they contracted for. We quote: Blue Annealed, Nos. 9 and 10, 1.81½c. to 1.86½c.; Blue Annealed, Nos. 18 to 20, 2.16½c. to 2.21½c.; No. 27, 2.36½c. to 2.41½c.; No. 28, 2.46½c. to 2.51½c., with the customary differentials between gauges. Store prices are 2c. to 2.10c. for No. 10 Blue, 2.05c. to 2.15c. for No. 12 Box, 2.10c. to 2.20c. for No. 14, 2.20c. to 2.30c. for No. 16, 2.40c. to 2.50c. for Nos. 18 to 20, 2.45c. to 2.55c. for Nos. 22 and 24, 2.50c. to 2.60c. for No. 26, 2.55c. to 2.65c. for No. 27, 2.65c. to 2.70c. for No. 28 and 3.15c. to 3.35c. for No. 30. Galvanized Sheets, in car lots from mill: Nos. 10 and 11, 2.36½c. to 2.41½c.; Nos. 17 to 21, 2.71½c. to 2.76½c.; No. 27, 3.26½c. to 3.31½c.; No. 28, 3.46½c. to 3.51½c. Galvanized Sheets from store: Nos. 10 to 14, 3c. to 3.10c.; Nos. 16 to 20, 2.90c. to 3c.; Nos. 22 to 24, 3.05c. to 3.15c.; No. 26, 3.25c. to 3.35c.; No. 27, 3.45c. to 3.55c.; No. 28, 3.65c. to 3.75c.

Structural Material.—Notwithstanding the off season, Structural mills are booking new tonnage somewhat in excess of shipments and consequently continue to fall behind on deliveries still further. The Structural Material for three lake ships is under negotiation and will be closed within a few days. Structural Material from stock continues to be held on the basis of 2.25c. to 2.75c. Quotations

on mill shipments for future delivery are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼ inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Merchant Pipe.—The demand continues good considering the season. The continued open weather has been favorable to a heavy movement from jobbers' stocks and their floors are generally pretty well cleaned up. Low prices have been withdrawn by most of the mills and the following official discounts represent the market's minimum: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—While the new tonnage that is reaching the mills continues light, jobbers report heavy shipments from stocks, on account of the activity of Western boiler shops. Prices continue to be well maintained, and official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2¾-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—All of the municipal lettings in this territory have now been disposed of and the Pipe founders are already beginning to devote themselves to the production of stock for next year's requirements. Quotations are unchanged, as follows: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Merchant Steel.—There is little change in the situation, mills continuing in receipt of heavy specifications on existing contracts and little new business is being placed. Prices are firm and unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron finish up to 1½ x ½ inch, 1.65c., and Iron finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Western foundry interests are now beginning to make contracts for delivery through the first half of next year at prices ranging from $3.65 to $3.75 for Connellsville product. Heavy shipments from the Connellsville region continue to be received and some consignment Coke still reaches this market, which accounts for the softening in prices on material for immediate delivery. The By-Product Coke Corporation, whose output will be sold by Pickands, Brown & Co., and which will have 120 ovens in operation about the first of the year, is closing heavy contracts for next year's delivery on the Connellsville basis. We quote Connellsville Foundry Coke for prompt and future shipment at $6.20 to $6.30, Chicago.

Old Materials.—Railroad offerings are much lighter than they have been for some time and the bulk of the material is being taken by dealers. Consumers generally covered requirements some time ago in anticipation of car shortage and higher prices. During the past week lists were issued by the Illinois Central, Chicago, Burlington & Quincy, Rock Island and Santa Fé railroads aggregating 6000 tons. The bulk of the material was disposed of at prevailing prices, although Car Wheels are selling on a somewhat higher basis than they have been. The demand for Heavy Melting Steel is heavy, although the output is more than equal to the demand, and quotations remain practically unchanged. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$23.00 to $23.50
Old Steel Rails, 4 feet and over	16.50 to 17.00
Old Steel Rails, less than 4 feet	16.50 to 17.00
Heavy Relaying Rails, subject to inspection	26.50 to 27.00
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	15.25 to 15.50
Frogs, Switches and Guards	15.75 to 16.25
Mixed Steel	13.00 to 13.50

The following quotations are per net ton:

Iron Fish Plates	$20.50 to $21.00
Iron Car Axles	23.50 to 24.00
Steel Car Axles	18.00 to 18.50
No. 1 Railroad Wrought	18.00 to 18.50
No. 2 Railroad Wrought	17.00 to 17.50
Locomotive Tires, smooth	14.25 to 14.50
Railway Springs	15.00 to 15.50
No. 1 Dealers' Forge	14.00 to 14.50
Wrought Pipes and Flues	12.50 to 13.00
Mixed Bushelling	12.50 to 13.00
Iron Axle Turnings	12.50 to 13.00
Soft Steel Axle Turnings	12.50 to 13.00
Machine Shop Turnings	12.00 to 12.50
Cast Borings	10.00 to 10.50
Mixed Borings, &c	9.75 to 10.00
No. 1 Mill	10.00 to 10.50
Country Sheet	9.00 to 9.25
No. 1 Boilers, cut to Sheets and Rings	12.00 to 12.50
No. 1 Cast Scrap	15.00 to 15.50
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	15.00 to 15.50
Agricultural Malleable	14.50 to 15.00

Pickands, Brown & Co., Chicago, have been appointed exclusive selling agents for the entire output of the new plant of the By-Product Coke Corporation, located at South Chicago. This plant consists of a battery of 120 ovens, which will be placed in operation shortly after the first of the year.

Philadelphia.

REAL ESTATE TRUST BUILDING, December 12, 1905.

The Iron and Steel markets have been rather quiet during the past few days, but prices are remarkably strong; so strong, indeed, that anything like active buying would surely have caused distinctly higher quotations. As it is, the very outside figures of last week have been maintained. There can be no doubt that whatever the country's Pig Iron production may be (and it is estimated at over 2,000,000 tons per month), consumption is quite as large if not larger. The suspension of work at mills and foundries during the holidays may enable the furnaces to get a little ahead, but even that will give no permanent relief, so that the main dependence is on a larger furnace output. Whether this can be realized or not is a question that, in view of so many contingencies, cannot be answered with any degree of confidence. James M. Swank of the American Iron and Steel Association gives a list of 17 furnaces to be blown in during November, December and January, with an annual capacity of 601,500 tons. This would make a very comfortable addition to the present available supply of Pig Iron, but no information is to be had in regard to the number that will go out during the months named, so that there is not much encouragement as regards the net increase in the supply. Nevertheless, with sufficient transportation and a continuance of fine, open weather, there is reason to believe that no serious scarcity will be met with, which should keep prices not far from their present level. There is a surprising amount of information, or misinformation, in regard to imports of foreign Iron. Cables have been sent from London announcing purchases of 25,000 tons of Hematite or Bessemer Pig Iron for the American market. Another intimates that a large tonnage of Middlesbrough Iron has been bought for the same destination, and in Europe there appears to be a general conviction that the United States will certainly have to draw thence a portion of its supplies. This comforting belief is not well founded. There is no confirmation on this side of any such purchases as above named. Those who would be the most likely buyers deny such purchases. They say they have made no inquiries for material, prices being altogether too high to be worth serious consideration. Merchant importers also regard the matter as entirely out of line with the market and say they see no chance for any such operations at the present time. There is, however, a cargo of 3000 to 4000 tons of Low Phosphorus Pig Iron loading for Baltimore, due to arrive early in January, cost, based on to-day's prices, being about $23.50, duty paid. There are also two or three cargoes of ordinary Hematite Pig Iron to be shipped on a contract made some months ago, but new business at the present parity of prices is believed to be out of the question. It has been stated that a considerable tonnage of Structural Material has been bought in Germany and Belgium for American account. Little or nothing has been attempted in this line by those who were conspicuous in importing such material three or four years ago, and as there are evidences that business of this character has been done it is inferred that the leading manufacturing interest has made some such arrangement by which it can fill a portion of its contracts with foreign material delivered at points best suited to its convenience. Be this as it may, there is certainly a widespread belief in Europe that the United States will be a large buyer there during the coming year. What will happen to European producers when they find (as they probably will) that they have built on a false foundation?

Pig Iron.—The market may be described as quiet, but firm. Sales have been mostly in small lots, and, as a rule, at the full quotations made last week. Large buyers appear disposed to hold off until they can get a clearer insight into the situation than is possible at the present time, and especially so as they are well covered for the next three or four months. The current output is nearly all under

contract, so that the surplus supply is barely enough to satisfy the day to day demand, which, however, is not important; but there is a fair amount of inquiry, more perhaps for the purpose of feeling the pulse of the market than with the intention of making immediate commitments. The feeling is a little unsettled in regard to prices. Some are strong in believing that higher prices will be seen sooner or later and that the possibility of a decline is hardly worth considering. There are others, however, who regard the prospective increase in production as opposed to any advance and think that the interim of dullness which is likely to continue during the remainder of the year will demonstrate the correctness of that assumption. The indisposition to make new engagements shows that opinions are not all one way, but rather that the pros and cons are being carefully considered, the final outcome being contingent upon which side will make the first start. An output of Pig Iron at the rate of 24,000,000 tons per annum, with prospects of its being at the rate of 25,000,000 inside the next 60 days, "doth give us pause," and well it may, although there is nothing in sight to indicate decreased consumption. The crucial point at the present time is, Can the furnaces produce the tonnage indicated? If they can, prices ought to be high enough. If they cannot, they will probably work higher. The hesitancy in the market will most likely continue until this problem is solved, which should be within the next three or four weeks. Prices are about the same as last week, all firm and some fractionally higher, as follows, for Philadelphia and nearby deliveries:

No. 1 X Foundry	$19.00 to $19.25
No. 2 X Foundry	18.25 to 18.75
No. 2 Plain	17.75 to 18.00
No. 2 Southern	18.75 to 19.00
Standard Gray Forge	16.25 to 16.50
Basic	17.75 to 18.00
Low Phosphorus	24.00 to 24.50
Bessemer	19.50 to 19.75
Malleable Iron	19.00 to 19.25

Steel Alloys.—The market is very unsettled and prices cannot be given with any certainty that they will be in force more than from day to day. Sales have been made at quotations named below, and from present appearances nothing less is likely to be accepted during the next few days. Sales of 20 per cent. Spiegeleisen have been made at $38, prompt shipment, and one of 80 per cent. Ferromanganese at $90, for the last half of 1906. It is said, however, that a much lower figure than $90 was quoted for future delivery a few days ago, but to-day's quotations are as follows:

Silico Spiegel, 10 and 18 per cent	$40.00 to $43.00
Ferrosilicon, 50 per cent	97.00 to 100.00
Spiegeleisen, 20 per cent	37.00 to 39.00
Ferromanganese, 80 per cent, $100 to $125 December, or for last half of 1906, $90.	

Steel.—The demand is fairly active, but mills are sold 30 to 60 days ahead, and are therefore not in a position to guarantee very quick deliveries. Prices are unchanged, at $30 for ordinary Open Hearth Steel, and from $33 to $40 for special carbons.

Muck Bars.—There is a little more inquiry and prospects are considered more favorable, but as yet no great demand has been developed. Puddled Bars from all Pig Iron are quoted at $28.75 to $29, seller's mill, or $27.50 to $28 for Bars made from Scrap material.

Plates.—The Plate trade is in good shape, but the mills are not so crowded with business as those further West appear to be. The output is very large, however, and the general situation is entirely satisfactory. Prices unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Still Bottom Steel	2.03½	2.08½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G.	.15 "
No. 9, B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 110 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—The only change appears to be that deliveries can be promised at a somewhat earlier date than heretofore. This no doubt is due to the fact that the output from new mills is beginning to be felt, which may in course of a few months result in much easier conditions. Prices are nominally 1.83½c. to 2c. for Beams, Channels, Angles, &c., but premiums of more or less importance have to be paid to get shipments within 30 to 60 days.

Bars.—There is a good demand for Bars, although some of the mills seem to be gunning around for business on the 1.70c., base, Pittsburgh. There is no scarcity of work, and prospects are considered to be quite favorable, but in one or two good sized orders bidding has been somewhat closer than was expected, although the price above named is said to be well maintained—viz., 1.83½c., Philadelphia territory. Steel Bars are hard to get sooner than in 60 or 90 days, in which case the price is 1.63½c., but actual prices for early shipment are nearer 2c. than the official quotation of 1.63½c.

Sheets.—A good demand is noted at unchanged prices—namely, Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is in a somewhat uncertain condition, and on the whole is inclined to be somewhat easier. Steel is an exception, however, although some holders who had rather lofty ideas have lowered their quotations materially. Consumers claim that they can get all they want at $17.50 to $18, but against that bids at a little over $18 to the railroads proved to be less than the actual buyer paid for a considerable tonnage of Steel. Business from now to the end of the year is likely to be dull and prices somewhat easier, but holders are very confident in regard to the ultimate outcome. Bids and offers for deliveries in buyers' yards are about as follows:

Scrap Steel Rails	$18.25 to $18.50
No. 1 Steel Scrap	17.50 to 18.50
Low Phosphorus Scrap	23.50 to 24.00
Old Steel Axles	21.50 to 22.50
Old Iron Axles	27.00 to 27.50
Old Iron Rails	24.50 to 25.00
Old Car Wheels	17.50 to 18.00
Choice Scrap, R. R. No. 1 Wrought	22.00 to 22.50
No. 1 Yard Scrap	20.00 to 20.50
Long and Short	19.00 to 19.50
Machinery Scrap	16.00 to 16.50
Wrought Iron Pipe	16.50 to 17.00
No. 1 Forge Fire Scrap	16.25 to 16.75
No. 2 Light Ordinary	13.00 to 13.50
Wrought Turnings	14.50 to 15.00
Axle Turnings, Choice Heavy	15.50 to 16.00
Cast Borings	10.50 to 11.00
Stove Plates	13.25 to 13.75
Grate Bars	12.75 to 13.00

Cincinnati.

FIFTH AND MAIN STS., December 13, 1905.—(*By Telegraph.*)

Pig Iron.—The market is quiet and reports indicate that sales during the week have been very much restricted. The inquiry is possibly slightly stronger than it was a week since, but no sales of any tonnage have been made and conditions locally are unimproved. One large Southern producer who has been out of the market for several months is now willing to sell a limited tonnage at current prices. At this time there seems to be little pressure either on the part of the furnaces or consumers to hurry matters, both having about reached the limit of their resources. The impression seems to prevail that we will see little change in the situation until after the first of the year and that trade will be very limited outside of the steady stream of small requirements that are always in evidence. Prices have apparently reached the top, if we are to judge from all reports, and, while well established, no indications are to be seen of any forward movement. We are told that consumers are gladly taking all the Iron due them on contracts and no orders are being given to divert shipments already routed. This in itself is a fairly reliable index to the situation, showing that melters have not overestimated their requirements and need all the Iron they figured they would. Gray Forge and the lower grades are quiet, with an occasional sale of analysis Iron at shaded prices. Freight rates from Hanging Rock district to Cincinnati are $1.15 and from Birmingham $2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$17.25
Southern Coke, No. 2	16.75
Southern Coke, No. 3	16.25
Southern Coke, No. 4	15.75
Southern Coke, No. 1 Soft	17.25
Southern Coke, No. 2 Soft	16.75
Southern Coke, Gray Forge	15.50
Southern Coke, Mottled	15.25
Ohio Silvery, No. 1 (8 % Silicon)	20.15
Lake Superior Coke, No. 1	19.15
Lake Superior Coke, No. 2	18.65
Lake Superior Coke, No. 3	18.15

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	$20.25 to $20.50
Lake Superior Car Wheel and Malleable	19.50 to 19.75

Coke.—The situation is unchanged and reports show serious delays in the Virginia fields from scarcity of cars. Shipments from Connellsville are moving in a more satisfactory manner. The market is strong and prices are firm and well established. We quote the best grades of 72-hour Connellsville and Virginia from $3.75 to $4, with Furnace grades selling from $2.75 to $3, f.o.b. ovens.

Finished Iron and Steel.—No change has developed and the market is strong, with ruling quotations firm. Structural Material continues to maintain its wonted activity and new specifications are coming forward with regularity. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots,

1.83c.; Plates ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—There is a strong tone prevailing and dealers report quite a large tonnage being received. The demand continues to show an increase and it looks as though the year would close in a very satisfactory manner. We quote dealers' prices, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, $17 to $17.50 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $20 to $21 per gross ton; Steel Rails, rolling mill lengths, $15 to $15.50 per gross ton; Relaying Rails, 56-lb. and upward, $24.50 to $25 per gross ton; Iron Axles, $22.50 to $23 per net ton; Car Wheels, $16.50 to $17 per gross ton; Heavy Melting Scrap, $15 to $15.50 per gross ton; Low Phosphorus Scrap, $18.50 to $19 per gross ton.

Pittsburgh.

PARK BUILDING, December 13, 1905.—(*By Telegraph.*)

Pig Iron.—Indications are that the buying of Pig Iron will be more active in the last half of December than in the first half. The purchase of 60,000 tons of Bessemer and Basic by the Cambria Steel Company for first quarter delivery is expected to be followed by a still larger purchase by the United States Steel Corporation for first quarter. There is some talk of the corporation buying a very large block of Bessemer Iron for delivery the first half of the year, but whether this will be done has not been decided. Bessemer Iron is very strong on the basis of $17.50, Valley furnace, but Basic Iron is a trifle lower than Bessemer and could be bought at $17.25 or slightly less. We note a sale of 3000 tons of Bessemer at $17.50 and one of 1000 tons of Basic at $17.25, Valley furnace. As yet nothing has been done on the inquiry of the National Car Wheel Company for 15,000 to 20,000 tons of Charcoal Foundry Iron for delivery late in next year. The sale of this Iron depends upon whether the company will secure a very large order for car wheels on which it is now figuring. There is a fair amount of inquiry for Foundry Iron and prices are firm, Northern No. 2 being held at about $17.25 to $17.50, Valley furnace, equal to $18.10 to $18.35, Pittsburgh. Reports of sales of 15,000 tons of Northern Foundry Iron for delivery next year at $18, Valley furnace, are untrue, no Iron having been sold at such a high price. On the contrary, we can report a sale of 5000 to 6000 tons of Northern No. 2 Foundry for delivery last half of next year at $17, Valley furnace. There is some inquiry for Low Phosphorus Pig Iron, which is very scarce, and we are advised of a sale of 2000 tons by a Shenango Valley furnace at $25.50 at furnace, or $26.35, Pittsburgh. This Iron is to run under 0.40 in phosphorus. There is some inquiry for Forge Iron and we note a sale of 1500 tons to a new consumer in the Shenango Valley at $16.25 to $16.50, Valley furnace.

Steel.—There is a fair inquiry for Steel and prices are very firm. We note a sale of 1000 tons of Bessemer Blooms at $26, Pittsburgh. We quote Bessemer and Open Hearth Billets at $26, and Sheet and Tin Bars in random lengths at $27, maker's mill.

(*By Mail.*)

The event of the week has been the purchase by the Cambria Steel Company of 60,000 tons of Bessemer and Basic Iron for delivery in the first quarter of 1906. No definite price was fixed on this Iron, but it will be the average monthly price of Bessemer Iron, f.o.b. Pittsburgh, shipped during first quarter. This large sale is certain to have the effect of further strengthening prices, which have been strong for the past two weeks in spite of the fact that there has been little Pig Iron sold. The light stocks of Pig Iron on hand December 1 at the various plants of subsidiary companies of the United States Steel Corporation indicate strongly that it will probably have to buy a round tonnage of Bessemer Iron for first quarter delivery. We can note other sales of Bessemer Iron, aggregating upward of 10,000 tons, at $17.50, Valley furnace, which seems to be minimum of the market on large lots, but on small lots ranging from 100 to 500 tons it is probable that $17.25 at furnace could be done. Basic Iron does not seem to be as strong in price as Bessemer and could readily be bought at $17.15 to $17.25, Valley furnace. The National Car Wheel Company is reported to be in the market for upward of 15,000 tons of Charcoal and Foundry Iron. This is for delivery late in 1906 and is to cover large sales of Car Wheels. There is a fair amount of inquiry for Foundry Iron, Northern No. 2 being held at $17.15 to $17.50, Valley furnace, or $18 to $18.35, Pittsburgh. There have been several small sales of Northern Forge Iron on the basis of about $16, Valley furnace, or $16.85, Pittsburgh. Bessemer and Open Hearth Billets continue to command $26 at maker's mill, but only a small tonnage is being sold, most large consumers being covered by contracts. Tonnage in Finished Iron and Steel continues heavy and Tin Plate is showing a surprisingly heavy demand for this season of the year.

Ferromanganese.—Ferro for spot shipment continues very scarce and would readily bring $125 a ton in small lots for prompt shipment. A sale of about 25 tons, divided between two customers, is reported at this price. Another reported sale is one of 200 tons for delivery commencing May, 1906, at $87 a ton, Pittsburgh. The outlook is that prompt Ferro will continue very scarce for some time.

Rails.—The mills have pretty well worked up the tonnage in Rails booked for delivery this year and will carry little tonnage over into next year. Orders continue to come in at a lively rate, including some heavy contracts. The Baltimore & Ohio Railroad has placed about 25,000 tons more, making the total tonnage given out by this road between 60,000 and 75,000 tons. We quote Standard Sections at $28 at mill. There has been another advance in prices of Light Rails, which we now quote as follows: 8-lb., $37 to $38; 10-lb., $33 to $34; 12-lb., $30 to $31; 16-lb., $28 to $29; 25 to 45 lb., $26.50 to $27.50, maker's mill.

Rods.—There is a moderate inquiry for Rods, due to the activity in the Wire trades, and prices are very firm. We quote Bessemer and Open Hearth Rods at $32.50 to $33 and Open Hearth Chain Rods $33, maker's mill.

Skelp.—The mills are still very much behind on deliveries in Skelp, the demand for which has been quite active for some time. Prices are very firm and we quote: Grooved Steel Skelp, 1.55c. to 1.60c.; Sheared, 1.65c. to 1.70c.; Grooved Iron Skelp, 1.65c. to 1.70c., and Sheared, 1.75c. to 1.80c. These prices are for ordinary widths and are f.o.b. maker's mill.

Plates.—While the new demand is not nearly so active as it has been, the mills are filled up for months on contracts on which consumers are specifying very freely. A very large part of the Plate tonnage now being turned out by the mills is going to the Steel Car interests, which have work for six months or more. With the slowing up in demand for Plates it seems hardly probable that there will be any advance in prices, although some of the Eastern mills are still insistent that Plates should be advanced. We quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ⅛ of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Structural Material.—While no large contracts have recently been placed, there is a good deal of work in sight and the Structural mills in this district are filled up with contracts for some months ahead. The Pennsylvania Lines West are in the market for about 5000 tons of bridge work, which will soon be let. The Carnegie Steel Company has decided to add a new 10-inch mill at the Clairton Works, which will roll the smaller sizes of Beams, Channels and other Shapes up to 9 inches. The mill will be a duplicate of the one finished last September and will have a monthly capacity of about 8000 tons. The mills are still much behind in deliveries. Prices are very firm and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.70c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—New tonnage being placed in Sheets is quite heavy and several of the makers advise us they have all the work on their books that they can turn out in the next two or three months. The American Sheet & Tin Plate Company is operating about 95 per cent. of its Sheet capacity and all of the independent mills, with few exceptions, are running full. Prices are firm, and we quote: Black Sheets,

Box Annealed, one pass through cold rolls, 10 to 12 gauge, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2c.; Nos. 17 to 21, 2.05c.; Nos. 22 to 24, 2.10c.; Nos. 25 and 26, 2.15c.; No. 27, 2.20c.; No. 28, 2.30c.; No. 29, 2.45c., and No. 30 gauge, 2.55c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.25c.; Nos. 12 to 14, 2.35c.; Nos. 15 and 16, 2.45c.; Nos. 17 to 21, 2.60c.; Nos. 22 to 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.15c.; No. 28, 3.35c.; No. 29, 3.60c.; and No. 30, 3.85c. We quote No. 28 gauge Painted Roofing Sheets at $1.65c. per square and Galvanized Roofing Sheets, No. 28 gauge, at $2.90 per square for 2½-inch corrugations. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—There is now a spread of $10 a ton between official prices of Steel Bars and the prices quoted on Iron Bars by the Republic Iron & Steel Company, and this is having the effect of causing some former users of Iron Bars to go back to Steel. The demand for both Iron and Steel Bars is not so active as it has been, nearly all of the leading consumers being covered by contracts. The new tonnage being placed is mostly small lots. However, contracts on the books of the mills are so large that they will take the output for two or three months. We quote Steel Bars at 1.50c., base, half extras for carloads and larger lots. Iron Bars are quoted at about 1.90c., Pittsburgh, by outside mills, but the official price of Republic Iron & Steel Company on Iron Bars is 2c., Youngstown, or 2.04¾c., Pittsburgh.

Hoops and Bands.—New tonnage being placed is light, but the mills are filled with contracts on which specifications are coming in very freely. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—The present active demand for Tin Plate is rather a surprise to the mills, which always look for dull trade at this season of the year. The American Sheet & Tin Plate Company is now operating close to 80 per cent. of its Tin Plate capacity, against about 45 per cent. at this time last year. This company expects to start its Humbert works at Connellsville, Pa., January 8. The independent Tin Plate mills are also running quite full and have a good deal of business on their books. There is some talk of another advance in the price of Tin Plates before long, but nothing official about this has been given out. We quote Tin Plate at $3.40 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of 5c. a box on the above price to the large trade.

Merchant Steel.—The mills have adopted a new list of extras on Tire Steel, the price of Planished and Machine Straightened Tire being 1.70c., base, half extras. Iron Finished Tire up to 1 and 1½ inches by ½ inch is 1.65c., base, half extras, as per Tire list. Iron Finished Tire 1½ inches by ½ inch and over is to be sold on the regular Steel Bar basis of 1.50c., base, half extras, as per Steel card. There has also been an advance of $2 per ton on Channel Tire, both solid and cushioned. Prices on other grades of Steel are firm and we quote: Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. The demand for Shafting is quite heavy, which we quote at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—We note a continued heavy demand and the mills are filled up with orders for several months ahead. One leading mill in this city is practically out of the market as a seller for delivery prior to April 1. We quote $2.05 to $2.10, f.o.b. maker's mill.

Spelter.—We note an active market in Spelter, the demand for which is unusually heavy. Prices show a sharp advance. We now quote prime grades of Western Spelter at 6.35c. to 6.40c., St. Louis, equal to 6.47½c. and 6.52½c., Pittsburgh. These are the highest prices that Spelter has reached in some years.

Merchant Pipe.—The new tonnage entered by the mills in November was larger than usual for that month in the year, but not quite as heavy as in October. Prices show no inclination whatever to advance, the extreme of the market on Merchant sizes of Pipe being about 81 per cent. off to the large trade. Official discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.				Consumers, carloads.			
	Steel.		Iron.		Steel.		Iron.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
	%	%	%	%	%	%	%	%
⅛ and ¼ inch	72	56	69½	53½	71	55	68¼	52½
⅜ and ½ inch	76	64	73½	61½	75	63	72½	60½
¾ to 6 inches	80	70	78	68	79	69	77	67
7 to 12 inches	75	60	73	57½	74	59	72	56½
Extra strong, plain ends:								
⅛ to ⅜ inch	65	53	62½	50½	64	52	61½	49½
½ to 4 inches	72	60	69½	57½	71	59	68½	56½
4½ to 8 inches	68	56	65½	53½	67	55	64½	52½
Double extra strong, plain ends:								
½ to 8 inches	61	50	58½	47½	60	49	57½	46½

Boiler Tubes.—New tonnage is rather light and the mills are running mostly on contracts placed some time ago. Prices are being shaded to some extent, depending on the order. Discounts on Boiler Tubes, which are more or less shaded, are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	44
1¾ to 2¼ inches	41	56
2½ inches	46	58
2¾ to 5 inches	53	64
6 to 13 inches	41	56

Iron and Steel Scrap.—The demand for Scrap has quieted down very considerably and, with more disposition on the part of dealers to move their Scrap, prices are somewhat softer to the extent of about 50c. a ton. We have revised our prices and now quote: Heavy Melting Scrap, $17.50 to $18; No. 1 Wrought Scrap, $19.50 to $20; Cast Iron Borings, $10.75 to $11; Bundled Sheet Scrap, $15 to $15.25; Old Steel Rails, short pieces, $17.50 to $18; long pieces, which seem to be in fairly active demand, are held at $18; Machinery Cast Scrap, $15.50 to $15.75; Cast Steel Scrap, $17.50; Old Iron Axles, $27 to $27.50; Old Iron Rails, $24.50 to $25; Malleable Iron Scrap, $15.50; Steel Turnings, $13.75 to $14; Old Car Wheels, $18, all in gross tons, f.o.b. Pittsburgh.

Coke.—The Coke market remains in about the same condition as noted in this report last week. The very plentiful supply of cars and the fact that practically every oven in the Connellsville region that can be operated is now in blast have had the natural effect of causing prices to ease off, and the best grades of Connellsville Furnace Coke are now being offered at $2.75 to $2.85 a ton at oven. Main Line Furnace Coke, which runs a little higher in Sulphur than strictly Connellsville, is being offered as low as $2.30 a ton at oven. Strictly Connellsville 72-hour Foundry Coke is firmly held at $3.50 at oven. The Upper and Lower Connellsville region made last week 366,019 tons.

Cleveland.

CLEVELAND, OHIO, December 12, 1905.

Iron Ore.—The announcement is made that the Merchant mines in the Lake Superior territory have sold 96 per cent. of what is expected to be moved during the season of 1906. Prices quoted are as follows: $4.25 for Bessemer Old Range, f.o.b. Lake Erie docks; $4 for Bessemer Mesaba; $3.70 for non-Bessemer Old Range, and $3.45 for non-Bessemer Mesaba. The greater part of this Ore has been sold on the higher level of prices. The statement is made that any estimate of a production of 40,000,000 tons for next year seems to be entirely out of the question. There is hardly a likelihood that the mines will be able to produce over 1,000,000 tons more next year than they did this, for the reason that mines are producing close to the maximum capacity at the present time. Such changes as will be made during the winter will hardly increase the possible output more than stated. It is generally expected, therefore, that the output for 1906 will not exceed 35,000,000 tons. While statistics are not yet completed showing the amount of Ore shipped during the year, it is estimated that the total by lake will reach 33,500,000 tons. The statement is made that with this vast increase in the shipment there is less Ore on Lake Erie docks than might have been expected, the direct movement being excessively heavy. As an indication of the extent of consumption, the statement is further made by those who have investigated conditions that the furnaces have not on their stock piles any more Ore than they had at this time a year ago. The furnaces are still actively at work and the conclusion has been reached by conservative observers that at the opening of navigation next year there will not be as much Ore on hand as there was at the opening of navigation this year. To take care of the increased business on the lakes some changes are being made in the Ore handling facilities on the docks. The Pennsylvania is putting in a six "leg" plant at Ashtabula and is planning to readjust its yards and harbor there. Its yards in Cleveland will also be completely overhauled. The Erie is making a general revolution in its Cleveland facilities to make room for new improvements. The Wheeling & Lake Erie proposes to more than double its capacity at Huron, and the erection of new furnaces at Toledo will entail new docks there. Automatic unloaders are being installed on all new docks.

Pig Iron.—The demand from the foundry trade is still strong, with no Iron in this territory for spot shipment. For the time being buyers are holding back for advanced delivery, but the statement is made that when they come in the market it will be found that the sales already made will leave very little Iron for disposition. Some furnaces,

however, have a good deal for sale during the second quarter. Prices are nominal, with No. 2 quoted at $18, Valley furnace. Most of the selling for spot shipment in this territory is done by the Southern and Eastern furnaces, which are in better condition to make prompt delivery than the local furnaces. Southern Iron is quoted at $14.50, Birmingham, to which is added the $3.85 rate to make up the Cleveland price. The supply of Basic is short and the demand is strong. The Coke supply is restricted by the car shortage, which is urgent.

Finished Iron and Steel.—During the past week the announcement was made that the United States Steel Corporation has contracted with the lake shipyards for two more 600-foot boats and that the Cambria Steel Company has duplicated the order. The lake yards are so full at the present time that deliveries on these contracts cannot be made before September 1 next year. The demands for Steel on these boats will therefore be deferred for the time being. It is understood that four more boats of the same size are to be ordered in a comparatively short time. The outlook in the Structural business is accordingly for no lighter trade than has been seen during the past few months. Specifications against old contracts are now ahead of the contract stipulations. The demand for Steel among the smaller consumers has not been lessened and premiums are being paid freely to the small mills having material for quick shipment. These amount to $5 and $7 a ton at mill, with a higher freight rate to buyers than if the material were coming from the Pittsburgh district. Structural Material out of stock is selling for 2.50c. for the larger sizes and 3c. in the yard for the smaller sizes, which are scarce. Billets are scarce, with buyers peddling their needs in order to get what material they want. It is announced that even in this manner the wants of the smaller consumers cannot be supplied. Sheet Bars are also extremely scarce. Prices range from $30 to $31 at mill for Bessemer and as high as $35 at mill has been paid for Forging Billets. Sheets are steady but not especially strong at the old prices, out of stock, of 2.05c. for No. 10 Blue Annealed, 2.65c. for No. 28 one-pass cold rolled and 3.65c. for No. 28 Galvanized as a basis. Bar Steel is strong, with specifications running ahead of contracts, especially with the car companies, which use the larger sizes, while the demand from the agricultural implement works has never been so strong. The smaller sizes are a little easy. The price holds at 1.50c., Pittsburgh, for both Bessemer and Open Hearth. Light Rails are strong at $30, Pittsburgh, for 16-lb. Plates are in strong demand from the shipbuilders for repair work and new contracts, while car companies are buying freely on new contracts and specifying heavily on the old ones.

Old Material.—The buying has been steady. While an effort has been made to boost prices, the market has been steady. The following represents dealers' quotations to the trade, gross tons: Old Steel Rails, $16.50 to $17.50; Old Iron Rails, $23 to $24; Iron Car Axles, $16.50 to $17.50; Heavy Melting Steel, $16.50 to $17.50. Net tons: Cast Borings, $9.50 to $10; No. 1 Busheling, $15 to $15.50; No. 1 Railroad Wrought, $16.50 to $17.50; Iron Car Axles (nominal), $22 to $23; No. 1 Cast, $14 to $15; Stove Plate, $11; Iron and Steel Turnings and Drillings, $11 to $12.

Birmingham.

BIRMINGHAM, ALA., December 11, 1905.

Pig Iron.—About the usual number of small inquiries and sales are reported, but no deals of any size have been made. There is no sign of weakness, however, and the price of $14.50 for No. 2 Foundry remains good. Scarcity of cars continues to retard the movement of Iron, with every prospect of growing worse instead of better as the cold weather approaches. The operators report many requests to anticipate shipments on next year's contracts. The usual lull which occurs just before the holidays is on and no activity is expected before January 1. The furnacemen express themselves as being well satisfied with prevailing conditions, but are expecting slightly higher prices after the New Year. The furnace of the Central Iron & Coal Company, Tuscaloosa, will be blown out for relining and repairs within the next few days. This is a subsidiary organization of the Central Foundry Company and the bulk of its output is used at the company's various Soil Pipe plants throughout the United States.

Cast Iron Pipe.—The manufacturers report business satisfactory with plenty of orders on hand to keep them going for several months. No recent orders for large tonnage have been booked. The following prices per ton of 2000 lbs. are quoted, f.o.b. Birmingham, on Water Pipe:

4 to 6 inch	$26.00
8 to 10 inch	25.00
12 to 20 inch	24.00
24 to 48 inch	23.00

Gas Pipe, $1 extra.

Old Material.—The market during the past week has been very quiet, with little change in price and no sale of any considerable quantity reported. We quote as follows per gross ton:

Old Iron Rails	$22.00 to $22.50
No. 1 Railroad Wrought	20.00 to 20.50
No. 2 Railroad Wrought	18.50 to 19.00
No. 1 Country Wrought	17.50 to 18.00
No. 2 Country Wrought	17.00 to 17.50
Wrought Pipe and Flues	14.50 to 15.00
Mixed Steel	13.50 to 14.00
No. 1 Machinery Cast	12.50 to 13.00
Stove Plate and Light Cast	11.00 to 11.50

The principal event of the week in industrial circles was the announcement of the consolidation of the Alabama Steel & Wire Company, the Alabama Company and the Underwood Coal & Coke Company into the Southern Steel Company, with a capitalization of $16,000,000, of which $10,000,000 is common and $6,000,000 preferred stock. The officers of the new company are E. T. Schuler, president; G. H. Schuler, vice-president and treasurer, and R. D. Carver, secretary. The main offices of the new company will be in Birmingham.

New York.

NEW YORK, December 13, 1905.

Pig Iron.—A moderate volume of business has been closed in Foundry Iron, the greater part of it for prompt delivery. As yet the founders have not covered far into the future, although inquiries for the second quarter are now at hand. Some of the stacks which have only recently started are offering Iron at a shade lower than the prices at which the leading makers are firmly holding and selling. There has been quite some movement of late in Forge grades. We quote: Northern No. 1 Foundry, $18.75 to $19; No. 2 Foundry, $18.25 to $18.50, and No. 2 Plain, $18 to $18.25, tidewater. Southern Iron is selling on the basis of $18 to $18.25, tidewater.

Steel Rails.—Morgan's Louisiana & Texas Railroad, a Harriman line, took the largest tonnage contracted for in the past week—15,000 tons. A large contract with an important interest is pending, but not definitely closed. In addition to their previous orders the Wabash has bought 5000 tons and the Buffalo, Rochester & Pittsburgh 4000 tons. The Maine Central has bought 6000 tons and the Hocking Valley 4000 tons.

Structural Steel.—Two large contracts have been let in New York in the past week. Chief of these is 25,000 tons for the Pennsylvania Railroad terminal, including 3000 tons for power house construction, all taken by Milliken Bros. Southern sugar house work let by the American Sugar Refining Company amounted to 15,000 tons. The total of miscellaneous contracts, of comparatively small amount, taken by the American Bridge Company in the week is 20,000 tons. Elevated work for the Brooklyn Rapid Transit Company, amounting to 3000 tons, was taken by the Pennsylvania Steel Company. Plans have been made for the new terminals of the Manhattan Bridge and are to be considered by the Board of Estimate at its next meeting. The Steel for the new Pierce Building on West street, about 5000 tons, was placed in the week, and buildings in New York calling for 10,000 tons are about to be let. We quote prices on tidewater delivery, mill shipment, as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inches, 0.10c. extra; Angles over 6 inches, 0.10c. extra. Sales out of stock, cut to length, are made at from 2.50c. to 3c.

Plates.—The local market has been quiet during the past week, which is mainly ascribed to the approaching inventory period. The mills are maintaining prices firmly, but so far it is stated that no premiums are being asked on prompt shipments, the Eastern mills being still able to meet buyers' requirements as to deliveries satisfactorily. Quotations at tidewater for shipment from mills are as follows: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 1.94½c. to 2.04½c.; Fire Box Plates, 2.04½c. to 2.60c., according to specifications.

Bars.—While no large contracts for Bar Iron have been placed, as far as can be ascertained, prices are somewhat stronger and quotations of 1.90c. to 1.95c., tidewater, represent the present market. Manufacturers do not seem to care to make contracts for longer delivery than 60 days, even at these prices. Steel Bars continue to be quoted at 1.64½c. to 1.84½c., tidewater, but the lower quotation is only made on contracts for delivery some months hence.

Cast Iron Pipe.—The city of New York will receive new bids December 22 on its specifications for 30,000 tons, on which the former bids have been rejected. The gas companies of this city will open bids to-day on a very large quantity of Pipe to cover their requirements for the coming year. General business keeps up wonderfully well, considering the lateness of the season. Carload lots continue to be quoted at $28.75 per net ton for 6-inch at tidewater.

Old Material.—Heavy Melting Scrap Steel is especially strong and several inquiries are still in the market. Sales

have been made of about 4000 tons since last report at the maximum price quoted. Old Iron Rails are stronger and at least 50c. per ton more can be realized than last week. Sales of two lots of 1000 tons each of Hammered Iron Car Axles are reported at a little better than $29, eastern Pennsylvania, but they were of high quality, ordinary grades ruling somewhat lower. Railroad Wrought Scrap is about holding its own, in face of the fact that several of the largest consumers have been completely out of the market for the past 30 days. No. 1 Yard Wrought is neglected, although no material change in prices is reported. Heavy Cast Scrap is about the strongest article in the list, with sales of about 1000 tons within the past day or two at full prices. Stove Plate has further improved and the stocks on hand are now very light as about 5000 tons have been shipped from this vicinity in November. Sales are reported of 500 tons of Borings and 500 tons of Turnings this week at full prices. Old Car Wheels are exceedingly strong and it is stated to be an easy matter to secure at least 50c. per ton more than last week. The tonnage of Scrap moved in this locality in October and November was probably the largest in the local history of this business. Stocks of various kinds on hand here have been reduced fully 60 per cent., and it is generally expected that prices of all grades will be higher before January 15. This remark applies notably to Steel Scrap. While Eastern Steel works have embargoes, they are still inquiring for more stock and will take additional quantities early in the year. It is claimed that the highest prices for Steel Scrap have by no means yet been realized. The rolling mills are not favoring dealers with many orders at present, but are believed to be quite actively buying under cover, taking supplies directly from railroad companies and other large Scrap producers. Quotations are approximately as follows for New York and vicinity per gross ton:

Old Iron Rails	$22.50 to $23.00
Relaying Rails	25.00 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.50
Old Steel Rails, short pieces	16.50 to 17.00
Heavy Melting Steel Scrap	16.50 to 17.00
Standard Hammered Iron Car Axles	26.00 to 27.00
Old Steel Car Axles	21.00 to 22.00
No. 1 Railroad Wrought	21.50 to 22.00
Iron Track Scrap	18.50 to 19.25
No. 1 Yard Wrought, long	19.50 to 20.50
No. 1 Yard Wrought, short	17.50 to 18.50
Wrought Pipe	15.25 to 15.50
Light Iron	11.50 to 12.00
Cast Borings	9.25 to 9.50
Wrought Turnings	13.00 to 13.50
Old Car Wheels	18.00 to 18.50
No. 1 Machinery Cast	15.00 to 15.25
Stove Plate	12.00 to 13.00
Malleable Cast	15.50 to 16.50

The Republic Iron & Steel Company will move its headquarters from Chicago to Pittsburgh on April 1st. The company will continue its New York office at 111 Broadway.

Metal Market.

NEW YORK, December 13, 1905.

Pig Tin.—The rapid advance noted in recent reports has been continued during the week, and prices in New York have advanced approximately 1c. per pound. On Thursday of last week the market was very firm at 35.55c., receding on Friday to 35.50c., while on Monday an advance of 40 points was scored, putting the quotation at 35.90c. The price eased off again on Tuesday and the metal was sold at 35.85c. To-day's prices are slightly firmer, at 36c. Business has been very good, consumers seeming anxious to cover their immediate and future requirements, as is usual on an advancing market. Many inquiries have also been made regarding prices for delivery during January and February and a goodly lot of metal has been sold from steamer due to arrive at but slight discounts from the above prices. The London price led the New York advance, and from the closing price a week ago of £160 15s. the market steadily advanced to £164 2s. 6d. to-day for spot, and £162 15s. for futures. The arrivals so far this month amount to 1390 tons. There are afloat for American ports 1170 tons. With the present unprecedented prosperity of the country some far sighted individuals well acquainted with the trade express the belief that still higher prices are not unlikely.

Copper.—The record of events in prices is apparently the only tale to be told regarding the Copper market. Producers of the metal are in a position to charge almost any price they choose for that portion of their product they have not already sold. For strictly spot stocks of Electrolytic 19c. to 19½c. is quoted, and round lots of 100,000 pounds probably could not be purchased even at these figures. For future shipment 18½c. to 19c. is asked, while for Lake Copper 19c. to 20c. is apparently the current range of quotations, but the price depends on the ability of the seller to deliver the goods and the urgency of the needs of the buyer. Reports of sales at still higher prices are freely circulated, and it is undoubtedly true that the ability to deliver the metal is a more important consideration than the price. The London market is steadily advancing, closing to-day at £80 5s. for spot and £79 5s. for futures. Best Select is quoted at £87. Trading on the London Exchange has been of a fair volume. The exports so far this month aggregate 5761 tons. The Chinese melters are reported as selling Copper daily on the London Exchange.

Spelter.—The price is practically unchanged from last week, spot December and January being quoted at 6.45c. to 6.55c., New York City delivery. In St. Louis the market is quoted firm at 6.40c. The London market is practically unchanged at £28 15s.

Pig Lead.—The market is exceedingly firm, 6c. to 6.10c. being quoted for New York delivery. In St. Louis the market is strong and 5.75c. bid. The American Smelting & Refining Company continues to quote nominal prices for shipment Lead, but orders are taken only at the price current on date of shipment. It is understood that approximately 3000 tons of Lead have been imported from Europe, which will net the importers about 6c., c.i.f. New York. There has been an exceedingly large number of inquiries for foreign Lead, but the market there seems to be very bare of stocks. Prices in London have steadily advanced and £17 6s. 3d. is now quoted.

Antimony.—The market is practically unchanged. The takings of consumers are of fair volume at the ruling price of 13c. to 13.50c for Cookson's, 12.75c. to 13c. for Hallett's, and 12.25c. to 12.75c. for other brands.

Nickel.—The old price of 40c. to 45c. for large lots continues in force; smaller quantities are sold at 50c. to 55c.

Quicksilver.—Jobbing lots of 100 flasks in 75 pounds each are sold in New York on a basis of $40 per flask. In San Francisco domestic orders are held at $39, while in London Rothschild's price is unchanged at £7 5s.

Tin Plate.—There is decidedly more activity at the mills and specifications on contracts are coming in very freely. The old price of $3.59, f.o.b. New York, or $3.40, f.o.b. Pittsburgh, continues in force. In Swansea, Welsh Plates are unchanged at 12s. 6d

Old Metals.—Scrap Copper in all forms is harder to obtain. Crucible Copper is in particularly good demand, but few sellers have any large stock on hand. Old Lead has likewise felt the effect of the advancing market and is higher in price and scarce at that. Scrap Brass is in heavy demand at slightly higher quotations. We revise quotations as follows:

	Cents.
Copper, Heavy Cut and Crucible	17.75 to 18.25
Copper, Heavy and Wire	17.25 to 18.00
Copper, Light and Bottoms	15.75 to 16.25
Brass, Heavy	11.50 to 12.00
Brass, Light	9.75 to 10.50
Clean Brass Turnings	10.25 to 10.75
Composition Turnings	13.25 to 13.75
Heavy Machinery Composition	15.25 to 15.75
Lead, Heavy	5.40 to 5.50
Lead, Tea	5.15 to 5.25
Zinc Scrap	4.85 to 5.10
Aluminum Scrap	20.00 to 25.00

Iron and Industrial Stocks.

NEW YORK, December 13, 1905.

The stock market has been very active, with an advancing tendency notwithstanding the high interest rates on money. In industrial stocks some of the gains made have been sensational. The most notable advances from Thursday to Tuesday were as follows: Tennessee Coal, from 126½ to 144¾; Colorado Fuel, 46⅝ to 52½; Republic common from 32 to 36⅛, preferred 104 to 107⅞; United States Steel, common 36⅝ to 39⅜, preferred 103⅛ to 106; Sloss-Sheffield common 89½ to 93¾; Railway Spring common 59⅞ to 63½; Pressed Steel common 55½ to 58⅞; American Steel Foundries common 13⅜ to 14½, preferred 46 to 50½. It will be noted that Tennessee Coal, Republic common and preferred and United States Steel preferred made new high record prices.

The advance in Tennessee and Republic stocks is credited to an approaching consolidation of the interests of these two companies. It is now virtually admitted that the Guthrie-Gates-Schley party, who are in control of the Republic property, have acquired the majority of the stock of the Tennessee Company. While the details of the plans for the consolidation have not yet been announced, it may be stated in a general way that a holding company will be organized and that it is proposed to create a very large cash surplus, to be applied to improvements and extensions. The merger will take in both the Northern and the Southern properties of the Republic Company, but the plans do not contemplate the acquisition of any other Southern properties, all reports to the contrary notwithstanding.

Last transactions in active stocks up to 1.30 p.m. to-day were made at the following prices: Can common 9, preferred 70; Car & Foundry common 40½, preferred 99; Locomotive common 70, preferred 117; Steel Foundries common 13¾, preferred 48¼; Colorado Fuel 54⅛; Pressed Steel common 56½, preferred 100⅜; Railway Spring common 61; Republic common 34¾, preferred 107¾; Sloss-Sheffield common 90⅞; Tennessee Coal 143¼; United States Cast Iron Pipe common 45½, preferred 94¼; United States Steel common 38¾, preferred 105⅝.

The stockholders of the E. W. Bliss Company, Brooklyn, N. Y., have ratified the proposition to increase the capital stock from $2,000,000 to $3,000,000. Stockholders of record December 16 are given the privilege of subscribing to one-half of the new issue at par.

The net earnings of the American Car & Foundry Company for the three months ending October 30 were $717,739.20.

Dividends.—American Car & Foundry Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable January 1.

American Smelting & Refining Company has declared the regular quarterly dividends of 1¾ per cent. on the preferred and 1¾ per cent. on the common stock. The preferred dividend is payable January 2 and the dividend on the common stock January 15.

Rhode Island Perkins Horse Shoe Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable January 15.

Youngstown Sheet & Tube Company has declared a quarterly dividend of 1¼ per cent.

The preferred stock of the Wheeling Steel & Iron Company, Wheeling, W. Va., has had a very rapid advance recently, selling as high as $160 a share, the par value being $100. It is stated that the company has earned this year 20 per cent. on its capital stock, and it is expected to declare a quarterly dividend of 2 per cent. this month and a stock dividend in February.

Otis Elevator Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable January 15.

Crucible Steel Company of America has declared a dividend of 1 per cent. on the preferred stock, payable December 29. Dividends on the issue were suspended in 1903. The shares are 7 per cent. cumulative and approximately 14 per cent. has now accrued on the stock.

New York Pig Iron Warrant Market.

There were few sales in the New York pig iron warrant market in the Produce Exchange during the week ending at noon on Wednesday, the total transactions amounting to but 700 tons. They were as follows: Certificates: 100 tons December regular, $16.75; 100 tons April foundry, $17.25; 100 tons May foundry, $17.55; 100 tons cash foundry, $17.25; 100 tons March foundry, $17.25. Warrants: 100 tons Alabama No. 2 foundry, $13.85; 100 tons Alabama gray forge, $12. The prices established on call Wednesday noon were materially lower than last week, being as follows:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash	$16.50	....	$16.75	$17.25
December	16.50	$17.00	16.75	17.25
January	16.50	17.00	16.75	17.35
February	16.50	17.10	16.75	17.50
March	....	17.20	17.00	....
April	....	17.30	17.00	....
May	....	17.40	17.00	17.40
June	....	17.40	....	17.40

James B. Oliver's Will.—The will of James B. Oliver, president of the Oliver Iron & Steel Company, Pittsburgh, who died recently, was filed for probate December 4. The estate is estimated to be worth between $7,000,000 and $8,000,000. To the Southside Hospital is left $5000. The Pittsburgh Association for the Improvement of the Poor is bequeathed a like amount. The Young Men's Christian Association of Sewickley is left $1000. Bequests of $5000 to $10,000 each are made to relatives and a special bequest of 1000 shares of the Oliver Iron & Steel Company is made to Daniel Leet Oliver, his son. All other personal property except his interest in the Oliver Iron & Steel Company is left to his widow and his four children, Mrs. Oliver receiving one-third and each child one-sixth. The interest in the Oliver Iron & Steel Company, except the special bequest to his son, is to be held in trust for ten years, the dividends to be paid to the widow and children. During the term of ten years Daniel Leet Oliver is given the right to purchase the stock or any part of it at an appraisement. If this option is not taken the stock is to be divided between the widow and children.

The record of the turbine steamer Turbinia on Lake Ontario during the season of 1904 was very satisfactory. She ran 203,280 miles on an average coal consumption of 1.48 pounds per indicated horse-power per hour, as compared with 1.50 as the best figure with triple expansion engines under like conditions of service. This year the daily coal consumption has been reduced from the 15.5 tons per day of last year to 13.5 tons. The consumption last year at the full speed of 23 miles per hour was 2.21 tons per hour.

Extraordinary Lake Shipments of Ore.

As usual, Escanaba, the single Lake Michigan shipping port for Lake Superior ores, is the last to send out cargoes, but the last vessel left that port this week. Exact figures are now available covering a marvelous season's performance. Railroads leading from iron mines to docks and all the machinery of the docks have been hard worked to achieve such a record as has been made. Official reports from all the nine upper lake docks indicate that the movement of Lake Superior ore by water this year is 33,473,761 tons. To December 1 the total was 33,071,844, so that the shipments this month have been 401,917 tons. In the following table the shipments from the various ports in 1905 are given, together with corresponding figures for the three previous years:

Iron Ore Shipments from Upper Lake Ports—Gross Tons.

	1905.	1904.	1903.	1902.
Escanaba	5,307,911	3,644,267	4,277,561	5,413,704
Marquette	2,977,828	1,907,301	2,007,346	2,595,010
Ashland	3,485,344	2,288,400	2,823,119	3,553,919
Two Harbors	7,779,850	4,566,542	5,120,656	5,605,185
Gladstone	0	553	85,816	92,375
Superior	5,118,385	4,169,990	3,978,579	4,180,568
Duluth	8,804,443	4,649,611	5,356,473	5,598,408
Total by lake	33,473,761	21,226,664	23,649,550	27,039,169
Total by rail, (1905 est.)	650,000	596,175	640,328	531,952
Total shipments	34,123,761	21,822,839	24,289,878	27,571,121

The leap taken by the Mesaba Range beyond all its records is the noteworthy fact about the year's shipments. Of the total of 21,702,678 gross tons shipped by water from Minnesota this year, 1,676,715 tons came from the Vermillion Range and 20,025,963 tons from the Mesaba Range. To this last amount are to be added about 150,000 tons of all rail Mesaba ore, including what was sent to Colorado, making the total from that range for the year 20,175,963 tons, or 59 per cent. of the entire Lake Superior output for 1905. This represents a prodigious extra draft upon the Mesaba reserves as compared with the previous big year, 1902, when the shipments of that range were 13,342,840 tons, or only 48 per cent. of the total. Last year its percentage was 55.7 (or 12,156,008 tons) and in 1903 53 per cent. (or 12,892,542 tons).

The United States Steel Corporation's shipments this year were about 19,500,000 tons, or 57 per cent. of the total. In 1904 the percentage of the Steel Corporation was 53.8; in 1903, 58.8, and in 1902, 60.4.

The Canadian Niagara Power Company has made application to the Dominion Government, as well as to the United States Government, for permission to erect power transmission cables across the Niagara River between Fort Erie and Buffalo. The construction of this proposed line will be very interesting, because the river at that point is wide and has a great deal of vessel traffic. Unless the cables are carried across the river on the International Bridge the span from shore line to shore line will be long and the cables will have to be erected at a considerable hight. At Niagara Falls the Canadian Niagara Power Company has cables erected on the upper steel arch bridge connecting with the station of the Niagara Falls Power Company. Down stream about 5 miles the Niagara, Lockport & Ontario Power Company has nine cables strung across from shore to shore, towers being set on either shore, and it is over this transmission line that Lockport and other cities eastward from Niagara will be supplied with power.

The blast furnace of the Sharpsville Furnace Company, Sharpsville, Pa., which has been idle since November, 1903, is all ready for blast and may possibly start up in the future. The stack is 15 x 65 feet and has a daily capacity of about 175 tons.

One Saucon furnace of the Thomas Iron Company at Hellertown, Pa., which went out October 16, will be started again December 16.

The Machinery Trade.

NEW YORK, December 13, 1905.

For this season of the year the demand for all classes of machine tools keeps up surprisingly well thus far, there having been no perceptible slacking up in orders. Inquiries also continue to come in in volume, but are mostly for small lots, as are the orders. During the past week, however, one very large order was reported, but this is an exception. We have frequently alluded to the very large business being done by practically all of the manufacturers and dealers and to the inability to make delivery within a reasonable time. In many instances deliveries cannot be made in three or four months. How far the time will be extended remains to be seen, but from reports it would seem that chances for deliveries being made within that time are becoming rarer every day. One important machine tool builder cannot promise delivery on a certain size of machine before June, 1907, his entire production to that date having been sold.

Machinery Requirements.

The subjoined list covers the inquiries of the week of the Pennsylvania Railroad Company through its purchasing agent, and, of course, represents only such equipment as is desired for immediate need. The inquiry for structural steel work necessary to complete steel structure for new East Pittsburgh passenger station and 18-foot passenger tunnel at East Pittsburgh indicates the early completion of improvements at that point: Two chipping hammers, arranged for hexagon shanked chisels; one vertical cross cut saw, to cut 12 inches thick; structural steel work necessary to complete steel substructure for new East Pittsburgh passenger station; structural steel work necessary to complete 18-foot passenger tunnel at East Pittsburgh; one vertical hollow chisel mortiser, 12-foot table, travel of table, 10 feet, without boring attachment; one band saw, with 44-inch wheel, 23 foot 6 inch blade, with band saw guide; one dimension planer, table 22 feet, with iron frame; one improved emery wheel stand, double end; one outside wood molding machine; one double cut off saw; necessary steel work for the construction of grain dryer building at Elevator No. 3, Canton, Baltimore.

The Delaware, Lackawanna & Western Railroad will shortly construct at Kingsland, N. J., a new locomotive shop, to be operated in connection with its coach shop and repair plant, which have been almost completed at that point and will be put in operation on April 1 next. The locomotive shop, which is to be 106 x 606 feet, will be a concrete and steel structure and up to date in every particular. No additional power will be required to operate the shop, as the power plant which is being erected now will be ample to take care of the new building. The company maintains a small locomotive shop at Kingsland at present and the available machinery in that structure will be moved to the new building when it is completed. This will be by no means enough for the requirements of the new shop and in several weeks the superintendent of motive power of the company will get out a list of requirements. This will in all probability include some heavy cranes and other large equipment, besides an outfit for a blacksmith shop and machine tools. As was stated last week the buying for the shops in the course of construction at Kingsland has not been completed, and it is thought in the trade that the list for the locomotive shop may be sent out at the same time that the additional requirements for the coach shop and repair plant are issued.

The New York Central Railroad will commence next spring the construction of a great freight receiving and distributing yard at Gardenville, just east of Buffalo, N. Y., for which 1000 acres of land have been purchased. The tracks will accommodate 20,000 cars and will extend along the Terminal Railway from the New York Central main line at Depew to the Pennsylvania Railroad crossing at Gardenville. All roads entering Buffalo and the Niagara frontier will have use of the yard. This is a part of the general scheme to remove all freight sidings, except industrial sidings, in the city of Buffalo, enabling the New York Central to continue its four-track system to the Exchange Street Station. Further improvements are contemplated, including the building of a new union station, which will be occupied by the New York Central, Lake Shore & Michigan Southern, Michigan Central, Pennsylvania, Erie, Delaware, Lackawanna & Western and several other roads. This work will be of considerable magnitude and will probably extend over a period of five years. Considerable work to further this scheme has been going on for two years, including the elimination of grade crossings in the city of Buffalo and on the Belt Line Railway, as well as making changes in street openings and a rearranging of the tracks of the local traction company.

We understand that the Cape May division of the Pennsylvania Railroad will be electrified from Camden to Millville and from Newfield to Atlantic City, N. J. The officials of the company are said to be interchanging views on the proposed work with one of the most prominent electric manufacturing companies.

One of the largest orders for machine tools closed in this territory for some months has just been secured by the Niles-Bement-Pond Company, New York, covering tools aggregating $180,000 in value. The order was placed by the Allis-Chalmers Company, Milwaukee, Wis., and included a large number of the heaviest class of tools. A short time ago the Allis-Chalmers Company sent out a list of machine tools it intended to purchase to equip the large extensions to its plants and the order just received by the Niles Company is for a greater portion of the tools specified.

Complete foundry and machine shop equipment is required by the Mead Drill Mfg. Company, Geneva, N. Y., to which place it has moved its plant from Burdett and where it is going to erect a modern plant for the manufacture of grain drills and other implements. The buildings to be erected will include a foundry, 50 x 100 feet; machine shop, 40 x 50 feet; three-story warehouse, about 50 x 125 feet, and a two-story office building. All the buildings will be of fire proof construction and in the warehouse and wood working buildings will be installed an automatic sprinkler system. The company will generate its own electricity for lights and will probably use gas for power, which can be secured from a large gas and coke plant adjoining its site. The company has about all of the wood working machinery which it will need, and in addition to the equipment for the new foundry and machine shops desires a large number of office and building supplies. No specifications for the machinery have been made out, but the company is now looking into the merits of all modern labor saving contrivances. It is specially interested in concrete blocks as building material and will be pleased to receive any information along this line, as well as catalogues from dealers and manufacturers of all kinds of equipment for machine shops and foundry, also quotations on lumber, iron and coal.

The Schmidt-Wilckes Electric Company, 522 Gregory avenue, Weehawken, N. J., which is erecting a new building, is now in the market for various kinds of machinery used for the manufacture of steel and brass parts. The contracts for the building and power plant have been let. The company manufactures telephones, switchboards and special electric apparatus.

The Nathan Mfg. Company, 92 Liberty street, New York, is building an addition to its plant at 106th street and East River. The addition will be five stories in hight and 20 x 50 feet. The company purposes to extend its manufacture of locomotive fittings and is in the market for some machinery to complete its equipment. Some of the machinery in the present plant will be moved to the new quarters, and the details are in the hands of the superintendent of the factory, who has his office at that place. The company is receiving bids on a 150-kw. generating plant.

It is reported that the Avery Company, Limited, Birmingham, England, manufacturer of scales, has bought a site in North Milwaukee, Wis., with the intention of erecting there a large plant.

Considerable quantities of various American equipment, &c., are to be installed in new nitrate plants under construction in the Tarapaca district, Chili, and contracts for further machinery will be placed in this market within the next few days. J. K. Robinson, whose headquarters are at Iquique, Chili, is now in New York for the purpose of making the purchases. Mr. Robinson represents the interests of the Westinghouse Electric & Mfg. Company, Westinghouse Machine Company, Standard Underground Cable Company, Lidgerwood Mfg. Company, Gould's Mfg. Company and others in Chili, Peru, Bolivia and Ecuador. While here he is making his headquarters at the offices of the export firm of William E. Peck Company, 116 Broad street. Mr. Robinson has already ordered various power equipment for the new Celia, Argentina, Aurelia and Florencia *oficinas*, or nitrate plants. Westinghouse direct connected 110-volt generating outfits are to be utilized for lighting the plants and Gould's triplex plunger and deep well pumps have also been contracted for. These pumps are to be operated by engines built by the Universal Kerosene Engine Company, 6 First street, New York. For the *oficina* Agua Santa two 100-kw. Westinghouse generating sets have been ordered, also 40 Westinghouse motors of various sizes. These motors will be utilized for driving Gould's triplex and centrifugal pumps, stone crushers, &c. Three Lidgerwood hoisting engines are also to be installed. Westinghouse generating equipment and 20 motors, Robins Conveying Belt Company's equipment and Lidgerwood electric hoists have been ordered for the *oficina* Valparaiso, while for the Victoria a 130 horse-power Westinghouse compound engine, arranged for direct connection to an 85-kw., 220-volt, Westinghouse engine type generator, has been requisitioned.

The contract awarded to Millikin Brothers, 11 Broadway, New York, by the Pennsylvania Railroad Company,

for the construction of its depot in New York, includes a power house in the construction of which 3000 tons of steel will be used. Nothing has been made known yet as to the size of the power plant to be installed, but it will necessarily be a large one. The machinery for the plant has not been purchased as yet and the matter will probably not be taken up for some time, as it may be that the plant will not be completed for more than a year. The trade can look forward, however, to a substantial order from this source.

The city of Valdosta, Ga., intends to purchase one duplex air compressor of from 850 to 1000 cubic feet capacity per minute and one 1000-gallon underwriters' fire pump. A. W. Varnedoe is city clerk.

South American Railroad Projects.

Americans are figuring on the important contract for the construction of the projected railroad between Arica, the most northerly port in Chile, and La Paz, the principal commercial center of Bolivia. The line will be about 300 miles in length. La Paz is located at the southerly end of Lake Titicaca, which is the most elevated body of water in South America. It is upward of 12,000 feet above sea level. At present La Paz has no railroad communication with the Chilean coast. The nearest line to the seaboard runs from Puno about 100 miles up the lake to the Peruvian port of Mollendo. The awarding of the contract for the building of the system is in the hands of the Chilean Minister of the Interior, who will open the tenders in Santiago on January 2. Among those who will submit bids are the New York engineering and contracting firm of J. G. White & Co.; James Stewart & Co., New York, Pittsburgh and St. Louis, and the British railroad contracting firm of S. Pearson & Son, Limited. German and French contractors are also understood to be after the contract, which will call for large quantities of bridge material, &c.

A new railroad is to be built in Ecuador under the supervision of American engineers and with American material, equipment, &c. Surveys have already been made and construction work is expected to begin inside of three months. The line will be called the Ferro Carril al Curaray. Charles H. Moore, first assistant engineer of the Erie Railroad, will be the chief engineer, and Walter G. Fox, formerly of the New York Central, is to be the first assistant engineer. Messrs. Moore and Fox have made surveys of the road this fall at the instance of the Government of Ecuador, which is to construct the system. The line will run from Ambato to San Antonio, a distance of about 125 miles. Ambato is the point where the trade from the interior of Ecuador concentrates. It is on the route of the Guayaquil & Quito Railroad, which system is now nearing completion to that place. It is located in the Andes at an altitude of some 8500 feet above sea level. San Antonio is situated at the head of navigation of the Amazon River. It is about 2700 feet above the Pacific Ocean. In the first instance wood fuel will be used on the road, but eventually electricity will be employed to operate the system, there being an abundance of water power along the route. One of the falls on the Pastaza River measures 198 feet in hight and is estimated to have a capacity of upward of 250,000 horse-power, even in the dry season, which covers a period of six months in that part of the world. There are three falls on tributaries of the Pastaza which are capable of developing 10,000 horse-power each. The country through which the line will pass is said to be very rich agriculturally. Mahogany, cedar and other woods are very abundant. At present the only means of transportation is by mule.

One of the prime purposes of the Ecuadorian authorities in building the road is to divert the 8000 odd tons of crude rubber which now find their way annually from the San Antonio district down the Amazon to the United States, a total distance of some 7000 miles. By shipping over the proposed road to Ambato and then down to Guayaquil, the principal port of Ecuador, by the Guayaquil & Quito road, thence to the States by steamer, a saving in distance will be effected of nearly 3000 miles. The Ambato-San Antonio road will cost, according to estimates, about $6,000,000.

Mr. Moore, whose office is in the Havemeyer Building, will call for bids for the construction tools, &c., in about three weeks.

Business Changes.

The Thomas W. Pangborn Company, 227-229 Fulton street, New York, has been appointed exclusive agent by the Brown Specialty Machine Company, Chicago, Ill., for its hammer core machine and equipment for the States of Pennsylvania, Delaware, Maryland, Virginia and West Virginia, in addition to New York, New Jersey and England, heretofore controlled by the Pangborn Company.

The Curtis & Curtis Company, Bridgeport, Conn., manufacturer of pipe cutting and threading machinery, has just opened a large store at 60 Centre street, New York, where a full line of its pipe cutting and threading machines will be on exhibit and can be seen in operation. H. H. Walker will be in charge and will demonstrate the many advantages possessed by this make of machine to those interested.

Philadelphia Machinery Market.

PHILADELPHIA, PA., December 12, 1905.

The buying of tools and machinery during the past week was generally satisfactory to the trade, and particularly so when the season is taken into consideration. As a rule sales fall off quite materially during the month of December and in some lines business during the past two weeks has proved no exception. In other cases, however considerably more business was closed than was expected. With the approach of the holiday season, as well as the close of the year, a general let up in business will no doubt be noticeable. Many manufacturers are preparing to close their accounts for the year. The taking of stock and the many other details of the year's end are claiming their attention, and buying is in most cases deferred until after the New Year or until plans for the coming year are formulated, after which the purchases of tools and machinery will be made accordingly.

The demand has been largely in the direction of medium weight tools. Small tools are in some instances becoming scarcer and deliveries on all lines are becoming more extended. Dealers' floors are beginning to look rather bare in some cases, but deliveries of stock orders placed some months ago are expected shortly to fill up the gaps. Most of the business taken continues to be made up of orders for a small number of tools distributed to various customers, no orders of any notable size being before the trade at the time. The railroads have practically stopped buying for the balance of the year. Orders from this source, unless for emergency cases, have practically been out of the market for several weeks.

Manufacturers of tools and machinery continue very busy, and in most cases have more work on hand than can be well taken care of. Quite a number are running their plants on double turn, while others are working overtime more or less regularly. Delays in obtaining materials promptly are seriously handicapping production in some instances. At present the difficulty in obtaining supplies of castings promptly is probably causing the greatest inconvenience. This is particularly true of gray iron work of the heavier classes, but as the situation in regard to the labor disturbances in the foundries is said to be improving, a better supply of castings is anticipated at an early date.

The demand for boilers and engines has not been very active. Some extensive power equipment is expected to come before the trade early in the coming year, but inquiry at the time is not very brisk.

Foreign demand has gained slightly, and a few good orders have been taken, both for machinery and tools, during the past week or two. Manufacturers are not pushing this trade very hard, as most of them have as much as they can do to take care of their domestic business. Those transacting a more or less regular export business in various specialties report business in fairly good condition.

The foundry situation is unchanged. Steel casting plants are receiving more orders than they can conveniently take care of, while gray iron foundries are still troubled with labor difficulties, and find it hard to handle the business offered. The situation in the latter case, however, is said to be in better shape, and deliveries will be made more promptly as fast as existing conditions are improved.

James T. Halsey, manufacturer of the Halsey steam truck, has removed from 1501 South Front street to 336-338 North York avenue. The facilities for manufacture are largely increased at the new location, and will be further augmented by the purchase of additional tools and machinery from time to time.

Wickes Bros. are about to move their Philadelphia branch from its present location in Section T, Bourse, machinery floor, to 605 and 607 Arch street, where they will have over 3000 square feet of floor space for the display of air compressors, engines, boilers and machinery.

The Street Committee of the Borough of Bristol, Pa., of which Joseph R. Grundy is chairman, will receive bids until December 20, 1905, for a separate system of sewerage and a sewage disposal plant. Bidders are required to visit Bristol and submit a general plan with their bids.

Estimates furnished by the Treasury Department, Washington, D. C., indicate the contemplation of considerable improvement both to the buildings and equipment of the League Island Navy Yard during the coming year. The total cost is estimated at $567,000, and includes among other things an extension of the fire protection system, railroad extension, electric elevators, electric capstans, a central heating system, extensions to the central light and power plant, considerable dredging work, &c. The erection of several smaller buildings as well as additions to others is also contemplated.

I. H. Johnson, Jr., & Co., Incorporated, are very busy in all departments. The demand for lathes is heavy and deliveries are necessarily extended, particularly on the larger sizes. A number of lathes, ranging from 30 to 48 inch swing, with beds of various length, have recently been shipped to parties in the Pittsburgh district, and a 56-inch tool, with 28-foot bed, has been shipped to parties in the South. A number of 36-inch lathes, with beds running from 12 to 27 feet in length, are nearing completion and will be shipped

customers at an early date. From the nature of inquiries received these parties look forward to a continuance of the present active business conditions.

The Hess Machine Works has recently shipped four sets of its new file making machines to parties in Switzerland and will ship two more sets to the same parties in a few weeks. Two sets of machines have been exported to a customer in Germany and one to Japan, while another will be exported to the latter country in about a week. A considerable improvement is also to be noted in the domestic demand. The plant is being operated to its best capacity.

H. B. Underwood & Co. are busy in all departments. There has been a good demand for railroad shop repair tools, particularly from Western roads, and orders for several portable boring bars and for portable rotary planing machines have been booked during the past week. A large volume of general machine work has been received from the local trade and business on the whole is in a very satisfactory condition. These parties have recently shipped a portable lathe boring bar and a portable cylinder boring bar for export to a London, England, railroad shop.

Chicago Machinery Market.

CHICAGO, ILL., December 12, 1905.

While the demand for machine tools and equipment from store has fallen off materially, which is expected during the month of December, nevertheless the pressure on machine tool builders is almost as great as during the month of October. Western drill manufacturers are from two to four months behind on orders and their stocks are entirely depleted. Foreign demand continues heavy and shipments to Japan, China and European countries are by no means infrequent. The demand for second-hand machinery has fallen off somewhat and the replenished floors of local dealers are not being depleted as rapidly as early in the year. This indicates that the general demand has fallen off somewhat and that requests for the immediate delivery of new tools are not so insistent. The action taken by the macnine tools builders at the New York meeting was not entirely unexpected, as advances have been made from time to time by individual manufacturers as the exigency of the market demands. The advances thus far announced only cover the increased cost of labor and material and have been very conservative.

The Chicago, Milwaukee & St. Paul Railroad Company, Chicago, is now at work on the foundations for a pattern storage building at West Milwaukee and a pattern shop at Milwaukee. The former building will be three stories, 80 x 120 feet, and the latter one story, 80 feet square.

The Canadian Locomotive Company, Limited, Kingston, Ontario, proposes an addition to its plant which will practically double the capacity. The company has under consideration the employment of gas engines, with producer or suction plants, to furnish power for the entire works. The list of new tools to be ordered is not yet completed.

The Ohio Structural Iron Company, Sandusky, Ohio, is in the market for quick action punches up to 9-16-inch hole in 1½-inch material and shapers 16 to 18 inch stroke.

Paul O. Moratz, Bloomington, Ill., is in the market for a three-drum sander, a planer, shaving fan, piping, swing saw, boring machine and steam coils.

The R. G. Denyes Machine & Tool Company has removed its plant from Hoopeston to Grayslake, Ill. The company manufactures the Denyes improved turret attachment, a patented device used on lathes and drill presses. A new factory will be erected at Grayslake in the spring.

The Fort Wayne Electric Works, Fort Wayne, Ind., has recently made the following shipments among others: One 20 horse-power compound wound motor and one 15 horse-power motor to the Textile Machine Works, Reading, Pa.; one 40 horse-power motor to the Railway Steel Spring Company, Hudson, N. Y.; one 200-kw. generator for direct connection to engine to the Sullivan Machinery Company, Claremont, N. H., and several hundred type K wattmeters to Havana, Cuba.

The American Gypsum Company, Port Clinton, Ohio, is preparing plans for a new calcining mill to be erected at Port Clinton. A power plant of about 400 horse-power, electrical machinery, conveying and elevating apparatus, mine and mill equipment, crushing and pulverizing machinery and other equipment will be required. E. L. DeVore is manager of the company.

McClintock & Co., Hartford City, Ind., have incorporated, with a capital stock of $30,000, to manufacture the Morrison crude oil-gas engine. The officers are: George R. Bell, president; Charles A. McClintock, secretary; John A. Sweet, treasurer. The company expects to build a new plant, but in all probability no steps will be taken in this direction until spring.

The Ozark Zinc Oxide Company, Coffeyville, Kan., has awarded contract to the R. & S. Sollitt Company, Chicago, for the erection of its new $100,000 plant, comprising nine buildings. The machinery, consisting of sample plant, kilns, engines, &c., was purchased from the Allis-Chalmers Company, Milwaukee. The Ozark Company builds its own furnaces.

Power and Municipal Work.

The Board of Public Service, Cleveland, Ohio, will receive bids until December 18 for the construction, delivery and erection of two 2,000,000-gallon pumping engines. The engines are to be either horizontal or vertical compound, or vertical triple expansion crank and fly wheel type.

Bids will be received by Abbeville, La., until December 18 for furnishing all the material necessary for the construction of a water works and electric light plant, including buildings, pumping engines, boilers, engines, generators, steel tower and tank, cast iron pipe, hydrants and valves and other equipment. George W. Summers will receive bids.

The Platt Iron Works Company, Dayton, Ohio, has been awarded contract for the furnishing of all the water wheels that are to be installed by the Oregon Water Power & Railway Company in its new Clokmas River plant at the dam at Cozidoro, which is located some 37 miles from Portland, Ore. The plant is a large one, developing 20,000 horsepower, and something like $500,000 will be expended for the machinery equipment.

The Department of Public Works, Chicago, will receive bids until December 22 for furnishing and erecting in the boiler room of the Harrison street pumping station two horizontal water tube boilers, with the necessary appurtenances.

The Board of Education of the city of Los Angeles, Cal., will receive bids until January 5, 1906, for furnishing an engine, generator and boiler for the new Polytechnic High School.

The Union Twist Drill Company, Athol, Mass., has opened a Chicago store at 68-70 South Canal street, under the management of H. E. Barton, for the past ten years with the Samuel Harris Company, Chicago.

New England Machinery Market.

WORCESTER, MASS., December 12, 1905.

The Boston dealers report a slight let up in the demand for machine tools, but it is not at all serious and a quick return to the full tide of prosperity is confidently expected.

The action of the National Machine Tool Builders' Association, at its special meeting at New York last week, in voting to raise prices of machine tools, is having its effect in the stiffening of prices on the part of those machine tool builders who are not members of the association. A number of these so-called independent companies have already announced advances and others are expected within a short time, the market making it entirely possible to get prices commensurate with the increase in cost.

Another influence of the recent meetings of the association has been to call attention to the matter of territorial rights of dealers. While the association tabled the report, which, if it had been carried, would have meant exclusive territorial rights for dealers handling the tools of the members, yet the discussion of the general question brought out a practically unanimous desire on the part of both manufacturers and dealers to have such a contract understanding. As a matter of fact not a few contracts recently made between manufacturers and their agents contain this provision, and it is said to be almost certain that within a comparatively short time the arrangement will become almost universal, to the mutual welfare of all concerned.

There is strong prospect of large additions to New England's machine shops in the spring, providing manufacturers are then convinced that their present great prosperity gives promise of being a lasting one. Some of the machine tool builders are considering the matter of enlargement from this point of view. One prominent manufacturer of tools is quoted as saying that if he is convinced that the present volume of business shows signs of permanency he will double his works, and they are not small. The present season in New England has been one of large expansion in machine tool manufacture, taking the aggregate, and most of the new building was undertaken with an outlook only as the incentive. Now the outlook has proved to fulfill all expectations, which will have its influence in the spring. Some machine tool builders and manufacturers of other lines of machinery have already made their plans for large additions. The hardware manufacturers are exceedingly prosperous and doubtless they, too, will make extensions, which will mean a demand for large numbers of machine tools. The only circumstance which could prevent the carrying out of many plans for new shop construction would be a slump in general manufacturing business and no one expects this to occur.

New Haven Railroad's New Shops.

The New York, New Haven & Hartford Railroad has decided to locate its new locomotive repair shop at Readville, Mass., instead of at Norwood, as was originally planned. A large tract of land has been acquired directly across the Midland Division tracks from the great car repair shops which were occupied quite recently. The estimated cost of

the new shops is approximately $1,200,000. There will be two main buildings, one a machine, erecting, boiler and tank shop, which will be 150 x 900 feet, of steel frame and masonry construction. The repair pits on the erecting side of the shop run longitudinally with the shop, avoiding the use of transfer tables. Pits will be served with electric traveling cranes. The blacksmith shop will be 80 x 350 feet. There will also be erected auxiliary buildings in the shape of iron houses, coal houses, scrap bins, &c. Such tools as are in constant use will be grouped and each group will be driven by a motor. The tools which are used intermittently and require the service of electric cranes will be equipped with individual motors. The two plants are separated by the Midland Division and communication will be under bridges on the Midland Division. The shops are designed to repair 45 to 50 locomotives a month. The shops will be electrically driven. On account of the close proximity of these shops to the present Readville car shops it is not the intention of the railroad company to erect any storehouses, offices or buildings of this nature, as those now occupied by the force at the Readville shops will be ample for both plants. Much of the work in connection with locomotive repairs, such as engine truck and tender wheel work, and all wood work and bolt work, will be done in the present Readville shops.

The Humphrey Machine Company, Keene, N. H., manufacturer of turbine water wheels, fire pumps, clutches, &c., contemplates the erection of a new machine shop next spring and a large number of new tools will be required, the list sent out comprising the following: One 10-inch boring mill, two heads; one 5-foot plain radial drill; one 56 x 36 inch by 12 foot planer, two heads; one 24 x 24 inch by 12 foot planer, two heads; one 36 inch by 18 foot triple geared engine lathe, one 24 inch by 27 foot back geared engine lathe, one 24-inch crank shaper, one 1½-inch universal milling machine, one 24-inch upright drill, one 36-inch pulley machine; three lathes, 14, 16, 18 inch, with beds about 12 feet long; one key seater, one toolroom lathe, one bolt and nut machine, one pipe machine up to 6 inches, one tool grinder, one sensitive drill. The company states that it will buy second-hand tools when satisfactory ones can be found. If not, new tools will be bought.

The Trimont Mfg. Company, Roxbury, Mass., manufacturer of wrenches, has acquired the property known as the Robinson brewery, located near its plant, and will occupy it for manufacturing purposes. A large additional floor area is thus made available, which is especially important at this time because of the fire last week, which practically destroyed two of the company's buildings, that devoted to the drop forge department and that containing the offices, assembling department and shipping room. The machine shop escaped. It is not yet known what damage was done to the hammers and other machinery of the drop forging shop. A new 8000-pound hammer escaped damage and has been removed and set up elsewhere. Other hammers may prove to have been seriously damaged, but the 8000-pound machine and a 2000-pound hammer which had been purchased and is now on the way to the works will serve to bridge the gap until required manufacturing facilities have been provided. It is doubtful if the burned buildings will be replaced, the brewery buildings providing ample space after some necessary alterations have been made. The present machine shop will be retained. The acquisition of this property ends the possibility of the company's moving to some other city, which had been contemplated because the facilities for manufacture were insufficient.

The Washburn shops of the Worcester Polytechnic Institute, Worcester, Mass., report an excellent foreign demand for tools, recent orders including one for 16 drill grinders from St. Petersburg, a similar order from Japan, one for six wet drill grinders from England and other orders from Germany, Italy and Austria.

Important improvements are to be made in New Haven Harbor, which will be dredged to greatly increase shipping facilities.

The Ingalls Garage Company, Newburyport, Mass., will erect a new garage and repair shop and is in the market for a steam heating plant and some machine tools for the repair shop.

The Morgan Construction Company, Worcester, Mass., announces that it has moved the headquarters of its European office from 1 Arundel street, Strand, London, to 52 Rue du Congrès, Brussels, Belgium.

The Eastern Mfg. Company, Bangor, Me., manufacturer of paper, has closed a contract with the Bodwell Power Company for 3100 horse-power of electrical energy from the plant now building at Milford, Me., 13 miles up the river, and also a contract with the Westinghouse company for $50,000 worth of electrical equipment.

The Baush Machine Tool Company, Springfield, Mass., is building an addition to its foundry 40 x 60 feet which will be devoted to a coreroom. Two large ovens will be installed.

The plans for the new textile mills of the Lawton Mfg. Company, Plainfield, Conn., include a two-story engine house, 44 x 56 feet; pump house, 21 x 23 feet; boiler house, 47 x 65 feet; economizer building, 14 x 40 feet, in addition to large mill buildings.

Fire in the Fitchburg Railroad pumphouse at the Central shaft of the Hoosic Tunnel, in Massachusetts, ruined the electric generating equipment, with a loss of $8000.

Cincinnati Machinery Market.

CINCINNATI, OHIO, December 12, 1905.

Perhaps one of the most important features in the situation is the fact that despite the activity in machine tool circles a very limited supply of stock is being made, showing very conclusively that a large proportion of manufacturers have as much work contracted for as they are able to take care of. The cry all along the line is the loss of numerous orders because of inability to guarantee absolutely certain deliveries. But as practically the same condition obtains all over the country it is very evident that much delay is occasioned to purchasers of tools, who in many cases are forced to wait their turn, which usually means a severe loss financially. Considerable trouble was experienced some months since in securing castings that were desirable, but this is now past and the local founders are fully able to supply what the trade needs. As a matter of fact, the foundries are not nearly so active as they could wish and trade is said to be moving in very easy channels, with here and there a little flurry that is soon spent.

One great source of satisfaction is the labor situation, which is all that could be desired, with employer and employee working together in a very harmonious manner. The matter of apprentices is causing considerable discussion throughout the country, good apprentices, it is said, being difficult to secure, probably due to the fact that they do not possess the requisite education demanded when compelled by reason of circumstances to take their places in the laboring world. It now looks, however, as if a marked change is destined to appear in this direction, largely brought about by public sentiment and philanthropic employers. The manual training schools that are to be located throughout the city will enable each pupil to follow his individual mechanical bent and perfect himself along the lines of drawing and general usefulness, so that if compelled by necessity to earn his livelihood before his faculties are fully developed he will be in a position to choose his calling in life with a certain degree of accuracy that otherwise he would not possess. It would seem therefore that these schools will be of incalculable benefit to builders of machine tools for the reason that they will to a certain extent be guaranteed apprentices of a higher order than they now have and thereby raise the standard of mechanics generally.

The structural people are as busy as they can be. Contracts running far into next year are common and the prospects of important developments are exceedingly fine. Building is certainly showing up in large proportions in this city, the report for the year indicating an increase of 66 per cent. over that of 1904.

The Standard Pulley Company and the Kisinger-Ison Company, a joint corporation, now located on Pioneer street, in this city, have purchased ground on Spring Grove avenue, between Township and Marshall avenues, where it is the intention to erect a new plant. Plans are being made for a foundry 110 x 170 feet and a machine shop 65 x 170 feet, which will be completed at an early date. It is said that the present plant is inadequate to handle the business, which has grown rapidly the past year, and greater facilities are absolutely demanded. When the plant is completed considerable new machinery will be bought.

The John Steptoe Shaper Company is as busy as ever, both foreign and domestic trade being very active. Several large consignments of tools have gone to points in Italy during the past few weeks and the inquiry from Germany is said to be much stronger.

Government Purchases.

WASHINGTON, D. C., December 12, 1905.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until January 9 for the following machine tools for the Portsmouth, Boston and Norfolk navy yards and the coaling station at Frenchman's Bay, East Lamoine, Maine: Schedule 279, piston inlet air compressor; schedule 280, buzz planer; schedule 281, electric hoist and runway; schedule 282, electric motor driven outfit, arbor press, milling machine, engine lathe, saw setting machine, shears, shaft straightener; schedule 283, automatic screw machine.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until Dececber 26 for a quantity of supplies for the Eastern navy yards, including motor generator sets, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until January 9 for motors and other supplies for the Mare Island and Puget Sound navy yards.

The Commissioners, Washington, D. C., will receive

bids until December 30 for one vertical triple expansion crank and fly wheel condensing pumping engine of 30,000,000 gallons capacity.

The following bids were opened December 5 for supplies for the navy yards:

Bidder 2, American Woodworking Machine Company, New York; 7, Aumen Machinery & Supply Company, Baltimore, Md.; 9, Alliance Machine Company, Alliance, Ohio; 12, Becker-Brainard Milling Machine Company, Hyde Park, Mass.; 15, Brown & Sharpe Mfg. Company, Providence, R. I.; 20, Baird Machinery Company, Pittsburgh, Pa.; 34, Chicago Pneumatic Tool Company, New York; 38, Drew Machinery Agency, Manchester, N. H.; 41, Detrick & Harvey Machine Company, Baltimore, Md.; 47, Erie Foundry Company, Erie, Pa.; 48 Fairbanks Company, New York; 51, Walter H. Foster Company, New York; 52, J. A. Fay & Egan Company, New York; 56, Garvin Machine Company, New York; 59, R. W. Geldart, New York; 63, Hendey Machine Company, Torrington, Conn.; 64, Handlan-Buck Mfg. Company, St. Louis, Mo.; 67, Hisey-Wolf Machine Company, Cincinnati, Ohio; 73, Independent Pneumatic Tool Company, Chicago, Ill.; 74, Ingersoll-Sergeant Drill Company, New York; 89, R. K. LeBlond Machine Tool Company, Cincinnati, Ohio; 91, Manhattan Supply Company, New York; 92, Manning, Maxwell & Moore, New York; 99, Morgan Engineering Company, Alliance, Ohio; 106, Niles-Bement-Pond Company, New York; 107, Oliver Machinery Company, Grand Rapids, Mich.; 114, Pratt & Whitney Company, Hartford, Conn.; 115, Prentiss Tool & Supply Company, New York; 117, Royce & Ricketts, Washington, D. C.; 125, Rand Drill Company, New York; 128, Sherman-Brown-Clements Company, New York; 132, Wm. Sellers & Co., Incorporated, Philadelphia, Pa.; 135, Smith-Courtney Company, Richmond, Va.; 145, Standard Railway Equipment Company, St. Louis, Mo.; 157, Vandyck-Churchill Company, New York; 158, Vermilye & Power, New York.

Schedule No. 220.

Class 1. One twist drill emery grinding machine—Bidder 20, $61.90 and $64.60; 64, $66.50; 117, $63; 132, $220; 135, $74.

Class 2. One engine and screw cutting lathe—Bidder 56, $462; 63, $650; 89, $520.34; 106, $509.50; 117, $575; 135, $659.

Class 3. One single spindle edge molding machine—Bidder 2, $166.65; 20, $176; 38, $149.60; 52, $172; 107, $175; 135, $140.

Class 4. One improved pipe cutting and threading machine—Bidder 20, $734; 51, $800; 56, $500; 64, $952 and $860; 92, $876; 117, $534.

Class 5. Bidder 20, $257; 51, $460; 56, $240; 63, $327; 106, $293; 114, $397; 115, $314; 117, $270 and $310; 135, $245.

Schedule No. 221.

Class 11. One motor driven band sawing machine—Bidder 52, $1525.

Class 12. One log jack—Bidder 52, $238.

Class 13. One pattern and core box machine—Bidder 20, $189.95; 52, $504; 92, $200; 135, $192.98.

Class 14. One electric driven band saw—Bidder 52, $944.

Class 15. One electric driven automatic cut off saw—Bidder 52, $1590.

Class 16. One electric driven self feeding rip saw—Bidder 52, $842.

Schedule No. 222.

Class 21. One open side extension planer—Bidder 41, $6315.

Class 22. Twelve pneumatic drills—Bidder 34, $901; 73, $1450; 74, $915; 125, $975; 145, $880.

Class 23. One portable electric internal grinder—Bidder 59, $96; 67, $96; 92, $96; 128, $96.

Class 24. One portable radial drill—Bidder 59, $190; 67, $190; 92, $190; 128, $190.

Class 25. One portable electric hand or breast drill—Bidder 34, $63.75; 59, $72; 64, $70; 67, $72; 92, $72, 128, $72; 135, $65.

Class 26. One portable electric grinder—Bidder 59, $40; 64, $40; 67, $40; 92, $40; 117, $50; 128, $40; 135, $37.40.

Class 27. One cold metal sawing machine—Bidder 64, $358; 157, $375.

Class 28. One cold metal sawing machine—Bidder 64, $258; 157, $275.

Class 29. One cold metal sawing machine—Bidder 64, $130; 157, $150.

Class 30. One scroll saw machine—Bidder 2, $87.50; 20, $72.75; 38, $83.50; 52, $99; 64, $105; 135, $72.59.

Class 31. One 2500-pound steam hammer—Bidder 9, $2570; 20, $1829; 47, $2196; 48, $2245; 92, $1800; 99, $2045; 106, $1694; 115, $1880; 117, $1850; 132, $1880 and $1955; 157, $2246; 158, $1886.

Class 32. One 150-pound power hammer—Bidder 48, $725; 117, $850, $1020, $955, $960, $1130 and $1065.

Class 33. One 100-pound power hammer—Bidder 48, $640; 117, $610, $705 and $685.

Class 34. One 50-pound power hammer—Bidder 48, $525; 117, $463, $550 and $540.

Class 35. One centering machine—Bidder 20, $222; 48, $210; 114, $281; 157, $234.

Class 36. One screw cutting gap lathe—Bidder 92, $723; 106, $453 and $875; 115, $535.

Class 37. One universal milling machine—Bidder 7, $800; 12, $550; 15, $542 and $692.75; 20, $744; 48, $643; 63, $630 and $680; 92, $640; 106, $585; 117, $560; 135, $557.

Schedule No. 239.

Class 78. One Franklin portable shop crane and hoist—Bidder 20, $124; 64, $129; 91, $139.40; 92, $127.

Schedule No. 241.

Class 112. One 18-inch metal sawing machine—No bids.

The following awards have been made for supplies by the Isthmian Canal Commission, serial No. 287, bids for which were opened November 24:

Manning, Maxwell & Moore, New York, class 1, two band saws, two automatic setting machines and one saw table, $942.10; class 5, two sets plate bending rolls, $3118; class 10, two valve reseating machines, $180; class 12, one 24-inch planer, $524.

Under bids opened November 21 for supplies for the navy yards the following awards have been made:

Sprague Electric Company, New York, class 171, one motor, $173.

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., class 172, two electric motors, $533.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 183, four hydraulic jacks, $132.80.

Baird Machinery Company, Pittsburgh, Pa., class 186, one valve reseating machine, $312.

Union Steam Pump Company, Battle Creek, Mich., class 190, 12 vertical simplex pressure pumps, $600.

Under bids opened October 17 for supplies for the navy yards the Case Mfg. Company, Columbus, Ohio, has been awarded class 49, one electric traveling hoist, $575.

Trade Publications.

Stone Working Tools.—Ingersoll-Sergeant Drill Company, 11 Broadway, New York City. Bulletin 2004. Contains illustrations and description of valveless stone tools, examples of architectural stone carving to which they are adaptable; stone surfacing machine; chisels for the surfacing machine; No. 2 Little Jap hammer drill used as a pneumatic stone surfacer; pneumatic stone polishing machine; No. 2 Little Jap hammer drill used for drilling "pop" holes; view of the valveless stone tools at work at the Hueyapam quarries, Mexico; air hose and couplings.

Machinery and Supplies.—W. P. Davis Machine Company, Rochester, N. Y. Catalogue, cloth bound; size, 6 x 9 inches; pages, 400. Contains so many illustrations of a great variety of tools and small parts that it is impossible to even list the classes which they cover. Each is accompanied with table of sizes and prices as often as necessary, and an alphabetical index is appended, making the book a valuable addition to the files of those who have to do with the purchase of all sorts of machinery and supplies.

Automatic Drop Lifters.—Peck Drop Press Works, New Haven, Conn. Catalogue. Size, 6 x 9 inches; pages, 36. Illustrates the Peck automatic drop lifter, Nos. 1, 2, 3A, 3½A; Peck patent poppet drop for stamping sheet metals, &c.; the four poppet drop; six poppet drop with stationary guide rods; flatware drop; six poppet drop for silver ware; bending drop; new model flat ware drop and new model six poppet drop, forge drops, &c. On page 36 of this catalogue is a table showing time occupied, the velocity acquired and the dynamic effect expressed in pounds of static pressure, produced by a solid compact body weighing 1 pound, falling freely from rest by the force of gravity. The principles upon which this table has been computed are also given. The application of the Peck automatic lifters to drops are clearly shown by line drawings on two extra sheets in the back of the catalogue.

Engines.—William Tod Company, Youngstown, Ohio. Catalogue. Size, 8 x 10 inches; pages, 50. Profusely illustrates and describes piston valve engines and Corliss engines. Tables give sizes of the standard horizontal engines of either piston valve or Corliss design for single cylinder engines, tandem compound engines and cross compound engines. Another table gives cylinder ratios for compound engines. The catalogue also contains a general description of engines and valve gears, of the single valve engine, the internal cut off valve engine, the Corliss engine, details of the standard horizontal engines, the cranks, the connecting rod, cross head, the piston, the cylinders, details of the single valves and valve gear, and details of internal cut off piston valve gear.

A correspondent desires to obtain strips of metal of unequal expansion under the influence of heat, welded or soldered together to make a finished strip about ⅛ inch thick and ¼ inch wide. It is stated that if satisfactory the materials will be wanted in considerable quantities.

Labor Notes.

A decision on an arbitrary demand made upon Norcross Brothers Company, contractors, by the Bricklayers' Benevolent and Protective Union No. 3 of Boston has been given by a court there. The contracting firm is building the Harvard Medical School and had the work on the flat arches over the windows and doors done on machines. The business agent of the union insisted that the work of cutting and shaping the brick and making and setting the arches was bricklayers' work and belonged to members of the union. He notified the firm that unless the arches were taken out and union men allowed to make and set new arches he would call a strike on other buildings Norcross Brothers Company had under way. On the refusal of this demand the strikes were called. An injunction was sought and the court granted an order restraining the business agent and all officers and members of the union from combining or conspiring to call a strike for the purpose of compelling the contractors to give up the use of machinery or to remove any arches. The order also forbade interfering by force, threats or intimidation with men desiring to remain in the service of the contractors, or combining or conspiring to interfere by force, threats or intimidation with the management of the contractors' business.

In connection with the strike of union workmen in the building trades against Post & McCord of New York, the firm states that it has offered repeatedly to produce positive proof that it has no connection with the American Bridge Company, against which the union has a grievance. The union, however, will not consider the offer and continues the strike, its avowed object being to force the American Bridge Company to discharge 25 nonunion men employed at McKeesport, Pa. Post & McCord say that from what the men have told them not one in ten wanted to go out. The Building Trades Employers' Association, which is backing Post & McCord, says it does not intend to initiate the open shop, but under its arbitration arrangement with the unions, in which representatives of the unions concur, it must go ahead and employ nonunion men to take the places the Housesmiths' and Bridgemen's Union have left, in violation of their agreement. The association makes this statement: "The arbitration agreement is intended to be permanent and we are under obligations to observe it ourselves. We have made agreements with the unions under its provisions and are bound to observe these agreements. The Amalgamated Sheet Metal Workers struck some time ago, in violation of the arbitration agreement, and were ruled out of the General Arbitration Board. They called off the strike, were forgiven, and were taken back. The same thing happened with the upholsterers. Now the Housesmiths' and Bridgemen's Union has been ruled out of the General Arbitration Board. If the open shop must prevail in that trade the whole responsibility lies with the union itself. We cannot let the buildings lie idle."

Twenty-four of the 32 unions in the New York building trades working under the arbitration agreement with the Building Trades Employers' Association, voted with the employers to suspend the Housesmiths' and Bridgemen's Union after its officers had refused to order the men back to work on Post & McCord buildings, pending arbitration. These 24 unions are thus committed to the action of the Employers' Association in putting nonunion men at work on these buildings. In carrying on the campaign against the striking union the employers have started an employment bureau, which will be operated under the name of the Allied Iron Association. Notice was given that after December 8, 1905, all iron workers seeking employment must apply at the new bureau instead of being put to work by union foremen.

The Pennsylvania State Association of the Builders' Exchange, in session at Pittsburgh, December 9, adopted a resolution indorsing the open shop. It declares that "It is unlawful for employers wrongfully to coerce, intimidate or hinder the free choice of workmen in the disposal of their time and talents; it is unlawful for workmen wrongfully to coerce, intimidate or hinder employers in the selection of such workmen as they choose to employ. No employer can say to a workman he must not work for another employer, nor can a workman say to an employer he cannot employ the services of another workman."

Of the 11 foundries in Philadelphia from which the molders and core makers went out on a strike October 23, all have been opened except one, and it is stated that about 50 per cent. of the strikers have been replaced by non-union men. In some cases former employees have given up their union cards and returned to work.

The Pennsylvania Engineering Works, New Castle, Pa., builder of heavy iron and steel plate work of all kinds, has voluntarily advanced the wages of its employees 5 per cent., effective December 16.

Rogers, Brown & Co.

CINCINNATI, OHIO, December 12, 1905.—The pig iron firm of Rogers, Brown & Co. this week celebrates its twenty-fifth anniversary. The following named gentlemen, resident managers, are here talking over ways and means looking to the best interests of the firm: Phillips Isham, New York; S. W. Hubbard and Harwood Wilson, Cleveland; C. H. Zehnder, Philadelphia; G. P. Bassett, Jr., Pittsburgh; H. W. Fernald, Boston; James C. Mears, St. Louis; Charles A. Stillman, Birmingham, and W. P. Hanson, Bluefield, W. Va. This conference will occupy to-day and to-morrow, at which time the seven partners will join them to go into the situation fully. The members of the firm are D. B. Meacham and J. K. Pollock, Cincinnati; A. A. Fowler, New York; William A. Rogers and William T. Shepard, Buffalo; M. Cochrane Armour and E. L. Billingslea, Chicago. On Thursday a dinner will be given at the Queen City Club, with covers to be laid for 30. The firm feels that much good may be derived from this meeting, and it is the intention to call the managers together once every year hereafter.

The Illinois Steel Company's Blast Furnaces.—Stack No. 1 of the North Works of the Illinois Steel Company, Chicago, will be blown in within a few days after an extended idleness. The two stacks at this plant have been used alternately for several years, as the blowing capacity of the plant has hitherto been insufficient to provide blast for the two furnaces operating at the same time. Owing to the heavy demand for pig metal, which is insufficient to meet the steel works' requirements, it was decided to prepare this stack for early operation, and the blowing capacity has been increased by bringing an engine from Joliet formerly used in the operation of stack No. 3, now dismantled. When this furnace is blown in the Illinois Steel Company will have 18 of its 19 blast furnaces in operation, one being out at South Chicago for repairs. The new furnace in course of erection at South Chicago will not be available until next spring. By the addition of this furnace the company will have 20 stacks, and it is probable that No. 3 at Joliet, which has been dismantled, will be replaced with a modern stack, which will be known as No. 4.

We are directly advised that the report is untrue, as telegraphed from Richmond, Va., that President Henry K. McHarg and other stockholders in the Virginia Iron, Coal & Coke Company had disposed of their interests to George Carter, representing a syndicate headed by Thomas F. Ryan. The control of the Virginia & Southern Railway, held by the same interests, was reported to have passed in the same deal. This also is denied.

It is reported that the Follansbee Bros. Company, Pittsburgh, manufacturer of tin plate and sheets, whose mills are located at Follansbee, W. Va., may add an open hearth steel plant to its works in order to make tin bars. The report, however, has not been officially confirmed.

HARDWARE

DEVELOPMENTS of the highest importance with respect to the proposition to establish a domestic parcels post and various other schemes allied thereto have occurred since the convening of Congress on the 4th inst., and the situation is now so serious as to command the attention not only of the entire Hardware trade but of manufacturers and merchants in all other lines. As foreshadowed in our advices, the first week of the new session witnessed the introduction of the Henry bill authorizing the creation of a domestic parcels post. In addition Mr. Henry also presented a bill providing for the consolidation of third and fourth class mail matter, which would enable merchandise to be transmitted at 8 cents per pound, or one-half the present rate. Representative Hearst of New York introduced a parcels post measure similar to the Henry bill, and Representative Smith of Illinois presented a bill providing for penny postage. The presentation of these measures thus early in the session served promptly to join the issue between the promoters of a domestic parcels post on the one hand and the advocates of penny postage on the other. But interest therein will be temporarily overshadowed by the report of the Postmaster-General, in which the parcels post question is handled in a noncommittal manner that cannot fail to excite apprehension among its opponents and in which an urgent recommendation for the consolidation of third and fourth class mail matter at a reduced rate of postage is included.

The Postmaster-General has heretofore been regarded as strongly opposed to the institution of a domestic parcels post, not only because of the enormous cost involved, which could hardly be seriously contemplated in view of the present deficit in the postal revenues, but also because his sympathies have been believed to be with the retail merchants of the country in their competition with the giant mail order houses. In his report, however, Mr. Cortelyou, while stating that it is not expedient at the present time to establish a domestic parcels post, proceeds to indicate the lines upon which such an institution should be founded and suggests that "in the event of favorable action by the Congress on the general question of a domestic parcels post it would probably be well to make a preliminary experiment." To those who are familiar with the "experiment" with which the colossal rural free delivery service was instituted this suggestion will cause grave apprehension.

There is therefore urgent reason for vigilance on the part of those who are opposed to the projects under consideration, which have for their object the opening of the facilities of the Post Office Department for the general carriage of merchandise. The effect which such legislation would have on the existing methods of distribution should be brought home to Senators and Representatives, not only by formal resolutions of associations and commercial bodies, but by personal letters and interviews. In such efforts there should always be a recognition of the broader aspects of the subject, so that it shall be evident that the plans for the establishment of a parcels post are not objected to simply because of their interference with individual interests, but on the broadest grounds of public policy. These efforts may be made we believe with the fullest confidence that the Postmaster-General may be relied upon to treat these questions with conservatism and a due regard to the commercial interests which they so nearly affect.

In our issue November 30 we referred to a letter received from merchants who criticised the manner in which the retail department of a jobbing house in their city was conducted. We made this complaint the occasion for calling attention to the difficulties which attend the carrying on of a retail department by a house which is doing also a wholesale business. We are in receipt, however, of another letter from a Hardware merchant in the same city in which our correspondent takes quite a different view of the situation, stating that his business has not been injured by the competition of the jobber's retail department and expressing his conviction that the methods employed by the house in question have been beneficial rather than detrimental to the retail merchants of the city. This difference of opinion enforces the point made in our former reference to the subject, when we alluded to the difficulties which are inseparable from the doing of both a wholesale and retail business by the same house. The enterprise and aggressiveness which would be justified in the carrying on of a retail business which stood by itself would be likely to alienate the trade if resorted to by a jobbing house in its retail department. It is therefore easy to see that there might readily be a difference of opinion among the merchants in their judgment of a jobbing competitor's methods. Very much would depend in any given case on the spirit in which such competition is regarded and the individual judgment as to the methods which may properly be adopted in such cases. It is the variety of opinion which naturally prevails in such matters that makes the maintenance of cordial relations with the trade a delicate matter where the interests of a jobber's retail department are to be considered.

Condition of Trade.

Some manufacturers are experiencing something of a lull in the receipt of orders and a relaxing of the pressure which naturally comes with the near approach of the end of the year and the taking of the annual inventory. In such cases, however, their order books are usually well filled, and with work enough in sight to keep them fully occupied for some time and with empty warehouses which are waiting for goods a temporary lessening of the demand is not at all regretted. This is especially the case, as the most confident anticipations are entertained as to business for next season. Indeed in some heavy lines manufacturers are conservative about accepting orders for future delivery in view of the condition of the market for the raw material and a possibility of higher prices. The tone of the market as a whole is decidedly firm, and advances, frequently in the form of the withdrawal of extreme concessions, are being made on many lines. With the jobbing trade business is generally exceedingly good, as illustrated in the fact that one of the largest houses in the country reported the receipt on Monday last of a larger number of orders than any previous day this year. In a good many lines negotiations are progressing for stock orders for delivery early in 1906. The holiday season promises to be characterized by exceptionally large business as a result of the well being of the people and the increased attention given to holiday goods and the finer wares. All classes,

in connection with the attention given to current business, are generally making preparations for the taking of stock and the closing of accounts December 31.

Chicago.

While the demand for Shelf Hardware is not as insistent as earlier in the year, largely on account of the season, jobbers of Heavy Hardware report that the total sales thus far this month are heavier than during the same period in November, although a falling off in demand is anticipated with the closing weeks of the year. The inability of the mills to meet the demands of large consumers of Iron and Steel Bars has greatly increased the store trade notwithstanding recent advances. Iron Bars from store are now sold at 2.25 cents and Steel Bars average 2 cents. Jobbers securing favorable shipments from mills can easily divert the same to large consumers at advances ranging from $2 to $3 a ton. High prices continue to prevail on Wood stock and the constantly growing scarcity of this material precludes the possibility of lower prices even after there is a slight falling off in consumption. Vehicle and implement manufacturers are pressing both mills and jobbers for material, and in their anxiety to lay up big stocks for the spring trade they are willing to pay almost any prices to secure material. The decision of the Illinois State Railroad and Warehouse Commissioners reducing Illinois freight rates an average of 20 per cent. on January 1 is of the utmost interest to the Hardware trade outside of Chicago. To meet the demands of the Chicago jobbers for lower rates and against discriminations which have existed in favor of shippers of neighboring States, the railroads last summer granted a reduction to Chicago shippers, but this did not apply in other sections of the State. The present ruling includes all shippers throughout Illinois and means a big reduction in freight charges, especially on less than car lot shipments. Conditions as they have existed in this State favored jobbers in Iowa, Missouri, Indiana, and instances have been cited where Ohio jobbers were enabled to make shipments into this State at a lower rate than given Illinois jobbers. The advances in Copper and Brass products was not unexpected, and further advances on Copper Ingots will necessitate still higher prices of finished products. Manufacturers of the higher grades of Builders' Hardware are no longer making concessions which ruled earlier in the year on account of the increased cost of raw materials. The market generally is stronger than it has been for some time, notwithstanding the fact that demand has fallen off considerably. No action has yet been taken with reference to advancing prices, although this is a possibility of the near future on high grade goods. A meeting of the Conductor Pipe manufacturers was held in New York last week to arrange for prices for the opening of the season after the first of the year. Local jobbers report a heavy demand for Lawn Mowers, and large orders are being placed for Wire Cloth and Poultry Netting. Dealers report heavy sales of Skates and filling in orders will soon be received. There is practically no abatement in the demand for Wire Nails and higher prices are expected with the advent of the new year.

NOTES ON PRICES.

Wire Nails.—Mills are actively engaged in filling orders, both new business and specifications on contracts. Large buyers are anxious to place orders for delivery as far ahead as possible, but mills are restricting deliveries to 60 days from date of contract. Car shortage and delays at terminals both interfere with prompt receipt of Nails. Quotations are well maintained, according to reports. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.80
Carload lots to retail merchants	1.85

New York.—Continued weather suitable for building operations keeps demand for small lots from store nearly if not quite up to that of last month. The market is generally well maintained at the recently adopted prices. Quotations for small lots from store are on the basis of $2.05.

Chicago.—Demand thus far this month has been unprecedented for this season of the year and the continued open weather has been favorable to a heavy consumption. Stocks in the hands of both jobbers and dealers are very light and heavy replenishing orders continue to be received. Both the American Steel & Wire Company and independent manufacturers are rigidly adhering to the 60-day rule with reference to future shipments. The new tonnage taken by the mills during the month of November and thus far this month is considerably in excess of shipments and deliveries are naturally being further deferred. As to prices, the market is now in better shape than at any time in the past two or three years, all concessions in disputed territory having been entirely eliminated. Quotations are unchanged, as follows: $1.95 in car lots to jobbers and $2 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh.—The mills continue to enter large orders for Wire Nails at present prices for shipment prior to February 1, jobbers buying very freely in anticipation of a further advance in prices which may be made before this year is out. Tonnage in Nails was very heavy and compared favorably with October, which was a record breaker. Stocks in the hands of jobbers are low and on unfilled contracts specifications are coming in very freely. It is practically certain that a meeting of the Wire Nail manufacturers will be held before this month is out and the chances for an advance in prices are stated to be more than even. The market is very firm at the official prices, which are being rigidly held. We quote Wire Nails at $1.80 in carloads to the largest jobbing trade and $1.85 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—Some of the mills are having difficulty in obtaining Nail Plate in sufficient quantity to meet their requirements, although they have contracts with the manufacturers. This had led some mills whose books are well filled with orders to quote $1.75 base, f.o.b. Pittsburgh, on Steel Cut Nails, which is an advance of 5 cents per keg on the regular association price. The market is strong in tone. Quotations are as follows: $1.70, base, for carload lots, f.o.b. Pittsburgh; $1.75 for less than carloads, f.o.b. Pittsburgh; $1.85 for carload lots, on dock, New York; $1.90 for less than carloads, on dock, New York. Iron Cut Nails, at points west of Buffalo and Pittsburgh, are held at 10 cents advance on Steel Cut Nails.

New York.—Demand is fair, and about in the usual proportion to Wire Nails. Small lots are generally quoted from store at $1.95 base, the exception being a few cheaper Nails, of which there are broken stocks.

Chicago.—Demand for Cut Nails has by no means been lessened by the recent advances made by mills. Local jobbers are unable to keep an assortment on their floors and mill shipments are very unsatisfactory. The high prices prevailing for raw materials have made recent advances necessary, and consuming interests are anxiously laying in heavy stocks anticipating still higher prices in the future. We quote Steel Cut Nails $1.90 to $1.95 in car lots and Iron Cut Nails $2 to $2.05.

Pittsburgh.—The recent advance in prices of Cut Nails to the basis of $1.70 is being rigidly held, and we understand that some mills that are well sold up are asking $1.75, and adhering to it. Demand is fairly active, and the mills are endeavoring as far as possible to regulate output to conform with actual demand. We quote Steel Cut Nails at $1.70 base, f.o.b. Pittsburgh, in carload lots, and $1.75 in less than carload lots, with an advance of 5 to 10 cents a keg for Iron Cut Nails.

Barb Wire.—But little new business is being placed, as is usual at this season. Liberal specifications on contracts are being received by the mills. New business is expected to revive after the first of the year. Quotations

are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Chicago.—The mills are not receiving heavy orders for future shipments, as the large jobbing interests will not place contracts for their spring requirements until after the first of the year. Jobbers' stocks are reported unusually light, however, and mills are anticipating unusually heavy requirements to provide for the spring demand. Quotations are well maintained, however, as follows: To jobbers, Chicago, car lots, Painted, $2.10; Galvanized, $2.40; to retailers, car lots, $2.15; Galvanized, $2.45; retailers, less than car lots, Painted, $2.25; Galvanized, $2.55; Staples, Bright, in car lots to jobbers, $2.05; Galvanized, $2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—While new business is light specifications on contracts are coming in very freely. Some inquiries for spring trade are in the market, but so far as we can learn no actual contracts have yet been placed. The manufacturers are adhering to their policy of booking new business at present prices prior to February 1. The market is very firm and we are advised that official prices are being rigidly held. We quote Painted Barb Wire at $1.95 and Galvanized at $2.25 in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—There is little new business being received by the mills, but specifications on contract orders are larger in volume than the capacity of the mills to ship. The tone of the market is firm at the following quotations, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—Specifications continue greatly in excess of mill shipments, although the new tonnage is comparatively light. Prices are well maintained as follows: $1.80 f.o.b. Chicago, in car lots, and car lots to retailers $1.85.

Pittsburgh.—New orders are light, but the mills are making heavy shipments on contracts, on which buyers are specifying very freely. The shortage in cars and also in steel, is operating to some extent against prompt shipments by the mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.65
Retailers, carloads	1.70

The above prices are for base numbers, 6 to 9.

Sinks.—Manufacturers report a heavy demand for Sinks, and state that sales continue satisfactory in spite of the recent advance in prices necessitated by the increased cost of raw material. Enameled Sinks are now quoted as follows: 30 x 18 inch, $2.20 each; 30 x 20 inch, $2.60 each; other sizes up to 36 x 20 inch, 35 per cent. discount; other sizes from 40 x 20 to 50 x 24 inch, inclusive, 20 and 5 per cent. discount. Painted Sinks are quoted as follows:

	Discount.
12 x 12 to 22 x 36 inch	60 and 5%
20 x 40 to 24 x 50 inch	55%
20 x 60 to 24 x 120 inch	35%

Copper Products.—The market for metal products composed wholly or largely of copper shows but few actual advances in the last week, with the exception of ½ cent per pound on bare and insulated Copper Wire and Cables and ½ cent per pound advance on Copper Rods and Bars. Ingot Copper is quoted 19 cents nominally for Lake or Electrolytic, but the stringency is such that the main difficulty is to obtain deliveries, April deliveries now ruling at 18½ cents. The mills are all running at full capacity and turning out a large product, which, however, goes mainly to concerns whose wants have been covered by contracts ahead, the principal stresses being among purchasers who buy at the market. Other advances in the near future are looked for.

Conductor Pipes, &c.—A meeting of the manufacturers of Conductor Pipe was held last week and several changes in discounts were decided upon. The differential betwen nested and not nested Pipe has been removed, one price now being quoted on Conductor Pipe, whether nested or not. Changes will also be observed in the prices on Copper Conductor Pipe and Copper Elbows as well as on heavy gauges in Galvanized Steel and Galvanized Charcoal Iron. Some rearrangement of territory is announced, Indian Territory and Oklahoma having been added to the Southwestern territory, and a new territory having been formed, consisting of the States of Kansas and Nebraska, which will be termed Western territory, with prices the same as for Southern territory. A recommendation is further made that no orders be taken for delivery later than March 31, 1906. The following table shows the discounts for the different territories:

	Eastern. Per cent.	Central. Per cent.	Southern. Per cent.	South-western. Per cent.
Conductor Pipe:				
Galvanized Steel	70-12½	70-5	65-12½	60-15
Galvanized Charc'l Iron	60-10	60-2½	50-15	50-7
Copper	50	40-10-5	40-12½	40-10
Eaves Trough:				
Galvanized Steel	80-5	75-10-10	75-12½	75-5
Galvanized Charc'l Iron	70-10	70-2½	60-20	65-5
Copper	50	40-10-5	40-12½	40-10
End Pieces, Miters and Drops:				
Galvanized Steel	35	35	35	35
Galvanized Charc'l Iron	Net list.	Net list.	Net list.	Net list.
Plain Ridge Roll and V Ridge Cap:				
Galvanized Steel	80-7	80-2½	75-10-5	75-7½
Galvanized Charc'l Iron	70-10	70-2½	60-20	65-5
Formed Valley:				
Galvanized Steel	75-5	70	60-10-10	65
Galvanized Charc'l Iron	60	57½	50-7½	50
Elbows:				
Galv., No. 26 gauge	50	50	50	50
Other gauges unchanged.				
Copper Elbows:				
From revised list	50	50	50	50

Eaves Trough Hangers.—The National Conductor Pipe Association recommend the following revised prices on Wire Eaves Trough Hangers, Double and Triple Cross Bar, Single Bead: 3, 3½ and 4 inch, $2.75 per gross; 4½ and 5 inch, $3 per gross; 6-inch, $3.50; 7-inch, $4, and 8-inch, $4.50 per gross. Double Bead, 25 cents per gross advance on all sizes. Discount to merchants, 33 1-3 per cent. On Steel Eaves Trough Hangers, standard list, the discount to merchants is 20 per cent.

Extras on Steel Tires.—The following changes in the extras on Steel Tires became effective November 20:

	Extra.
1 x ¼ inch and heavier	Base sizes.
1½ x 3/16 and 7/32 inch	$0.20
1 to 1 7/16 x 3/16 and 7/32 inch	.30
1 to 1 7/16 x ⅜ inch	.50
⅞ x ¼ inch	.30
⅞ x 3/16 and 7/32 inch	.50
⅞ x ⅜ and 5/32 inch	.60
¾ x ¼ inch	.30
¾ and 3/16 and 7/32 inch	.80
¾ x ⅜ and 5/32 inch	1.00
⅝ x 3/16 inch	1.00
⅝ x ⅜ and 5/32 inch	1.10

For intermediate sizes the next higher extra will be charged in all cases. No extra charge for cutting to Tire lengths.

Quantity Differentials.

All specifications for less than 2000 pounds of a size will be subject to the following extras, the total weight of a size to determine the extra, regardless of lengths. In determining these charges each specification is to be considered separately:

Quantities less than 2000 pounds, but not less than 1000 pounds, 20 cents per pound extra.

Quantities less than 1000 pounds, 60 cents per pound extra.

Rope.—The market continues without change in prices, and with a demand satisfactory for the season. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Window Glass.—An association of manufacturers representing more than 1600 pots was formed at Pittsburgh last week for the purpose of improving conditions of the Glass market. The name of the new organization is the United States Window Glass Association. Officers were elected and an Executive and Wage Committee was appointed, the committee to meet the Executive Committee of the Amalgamated Window Glass Workers Association this week. This is the "flat wage scale" union under which most of the Glass factories are now working. There was a lack of representatives from mills operating under the "sliding scale," also from co-operative factories. It is questioned by some whether the new association will accomplish much in improving market conditions. It is reported that the American Window Glass Company, which manufactures machine blown Glass, has changed its discounts on the first three brackets from 90 and 30 per cent. discount and 90 and 10 and 5 per cent. discount for all larger sizes, to 90 and 25 per cent. discount all around, excepting 16 x 20 and green house sizes in double strength. These new prices will make it still harder for the hand blown factories to compete for business.

Linseed Oil.—Business is confined to small lots to meet urgent requirements. Crushers do not appear to be pushing sales, though holders of Oil bought on contract some time since are endeavoring to dispose of surplus stocks at card prices. Quotations for prompt delivery are as follows: State and Western Raw, 36 to 37 cents, according to quantity; City Raw, 38 to 39 cents per gallon. Boiled Oil, 1 to 2 cents advance over the prices of Raw.

Spirits Turpentine.—The Southern market is active, quite a large amount of business being transacted. The local market is quiet, limited buying being the rule. Prices have fallen off about ½ cent per gallon during the week, with the possibility of an advance in sympathy with the Southern activity. New York quotations are as follows, according to quantity: Oil Barrels, 64½ to 65 cents; Machine Made Barrels, 65 to 65½ cents.

AN INJUSTICE TO THE WHITE LILY WASHER COMPANY.

OUR attention has been called by the White Lily Washer Company, Davenport, Iowa, to an article which recently appeared in an Iowa journal, in which the company is accused of furnishing machines as premiums to a certain proprietary medicine concern, which gives them away to its customers on the purchase of a stipulated amount of its "remedies." The White Lily Washer Company refers to the fact that it is opposing the catalogue and premium-giving houses consistently and earnestly, and on looking into the matter carefully the company finds that it has never quoted or had any correspondence whatever with the parties who offered the company's machines in connection with sales of medicines, nor with any one in the Eastern town in which the remedy plant is located. The company also finds that the electrotype used in a daily newspaper advertisement by the medicine concern was different from any ever made by it. The White Lily Company further expresses its willingness to spend $1000 if it can possibly prevent the offending parties from filling any orders they receive. This would seem to be a case where the goods were obtained through some underground channel, as the company sells only to the legitimate retail Hardware trade, which it is its desire and purpose to protect in every way possible.

A FIRE recently occurred in the Hoboken factory plant of the Keuffel & Esser Company, 127 Fulton street, New York. Fortunately, however, it was confined to several annex buildings and the main buildings were not damaged in any way. The company anticipates no serious interruption in its business on account of the incident.

William Saunders & Son have purchased the Hardware business of C. H. Kienow, Winnetoon, Neb.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Too Much Said About the Catalogue House Question.

To the Editor: I was very much interested in the letter from "A Missouri Retailer" in your issue of October 26, saying that one of the catalogue houses had opened up a warehouse near him. He expressed the opinion that the retail Hardware merchant is beginning to feel the effect of this public agitation of the catalogue house question, which has resulted in these houses paying much more attention to the Hardware line than they ever did before, and getting up all kinds of new ways of knocking out the small dealer, even if they have to establish branches to do it.

I am also from Missouri and like "to be shown," and I have felt as your correspondent did—at least in doubt whether helping the retailer was the real idea, or whether the jobbers who got up this "grand stand" play really figured on anything but the amount of business they could get by giving us this "hot air" about working for the retailer, pulling together, &c.

His letter and your exposure of the Eagle Horseshoe deal have "shown me." Here are the very people—members of a jobbers' association, one of them at one time an officer of the National Hardware Association—who have been standing in the lime light preaching to us how they are unselfishly giving their time and attention to preventing the catalogue house from getting and selling to our customers goods in our line, never forgetting to impress upon us our duty to patronize them in return for their efforts. On top of this they turn around and sell their own goods to them on the quiet.

I have about come to the conclusion that the result of this whole matter is just what some people said it would be—a whole lot of advertising for a few jobbers, and a whole lot stronger fight on the retail merchant by the catalogue houses than there would have been if they had not made so much fuss about it.

ANOTHER MISSOURI RETAILER.

Special Brands Mean Inferior Quality.

To the Editor: I have noted with interest the articles published in your valuable paper upon the subject of Special Brands, and I wish to add my protest with those who have so ably covered the ground against the practice. I have almost invariably refused to buy goods with the jobbers' special brand, believing, as the testimony of the manufacturers shows, that it means an inferior quality, else why should such goods, said to be manufactured by well-known firms, be sold at a less price than those with the manufacturers' brand? I once bought a bill of Cutlery with our firm's brand. While unpacking, a gentleman of experience said: "Are you trying to build up a reputation for a special brand of Cutlery for the benefit of your children and grandchildren?" While this was many years ago, I have ever since refrained from buying special brands and, I believe, to my advantage.

Slater M. Varnell, formerly with the Magill Hardware Company, and Walter J. Varnell, formerly with the Chattanooga Roofing & Foundry Company, both of Chattanooga, Tenn., have purchased Singleterry & Morgan's stock of Hardware at 274 Montgomery avenue and began business December 1 under the style of the Varnell Hardware Company.

The business of the Chelan Hardware & Furniture Company, Chelan, Wash., has been bought by J. Highland.

Skandia Hardware Company, Rockford, Ill., is erecting a new building.

DEATH OF FRANK B. ORR.

FRANK B. ORR, president of the Orr & Lockett Hardware Company, Chicago, and one of the pioneer Hardwaremen of the West, died of pneumonia November 28 at his residence in Chicago. Mr. Orr was born in Mishawaka, Ind., in 1838. His connection with the Hardware business began in his twenty-third year, when he opened a store at Mansfield, Ohio. His efforts were successful, but being ambitious and realizing the limitations of Mansfield for developing a business, and believing that in the Northwest lay golden opportunities for the young man with push and high aspirations, Mr. Orr disposed of his stock at Mansfield in 1871 and started for St. Paul. Reaching Chicago en route a few days after the big fire in that city, however, when plans were being formulated for its rebuilding, he was quick to grasp the

FRANK B. ORR.

situation and altered his original plans, deciding immediately upon the establishment of a Hardware store in Chicago. A few days later he formed the acquaintance of Oswald Lockett, who was at that time connected with the Hardware firm of Edwin Hunt & Sons, and a partnership was shortly arranged which was the beginning of the corporation of which he was president at the time of his death. A store was first opened on the West Side, later moved to Clark street and subsequently to its present situation on Randolph street. Mr. Orr was a man of high ideals and one whose sense of honor in business was particularly keen and noteworthy. Although of a retiring disposition he was a member of several prominent clubs, among them being the Union League, the Homewood Country and the Fly Casting clubs. His connection with the last named club is explained by the fact that he was an ardent fisherman, although of late years ill health had prevented his participation in the sport. Mr. Orr is survived by a widow, a brother, Charles B. Orr, who is a member of the Hardware firm, and two sisters.

EXHIBITS AT THE IOWA CONVENTION.

THE IOWA RETAIL HARDWARE DEALERS' ASSOCIATION, whose annual convention will be held at Des Moines, February 14, 15 and 16, are perfecting arrangements by which they will make the exhibits a feature of the convention programme. For this purpose the association has secured the first and second floors of the Bush Block, 812 and 814 Walnut street. These two rooms, each 44 x 125 feet, will give ample space for the meetings and exhibits, and identify the exhibits as a feature of the programme, at the same time assuring exhibitors an equal opportunity of displaying their products. The association will provide a Superintendent of Exhibits, and also porters and watchmen to look after the building and displays. Those who desire particulars as to charges, &c., may communicate with A. B. Sale, secretary-treasurer, Mason City, Iowa.

CATALOGUE HOUSE COMPETITION AND PARCELS POST.

C. B. CARTER, Knoxville, Tenn., secretary-treasurer of the Southern Hardware Jobbers' Association, is circulating copies of a pamphlet entitled "Catalogue House Competition," which has been issued under the auspices of the Wholesale and Retail Hardware Joint Committee. It is being sent to all the members of the association and also to retail Hardware and general store dealers generally through the South. It impresses the importance of individual as well as organized effort for preventing the further spread of this form of competition. Mr. Carter has also sent out a circular to the members of the Southern Association calling attention to the action taken by the National Grange in support of the domestic parcels post movement, as outlined in the letter of our Washington correspondent in *The Iron Age*, November 30. The members are urged to exert every possible effort to defeat this movement through their representatives in Congress, while on the other hand asking their support of a one-cent letter postage measure.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM GEO. A. BECK, who has bought the Hardware, Stove, Implement and Sporting Goods business of N. A. Simmons, Binger, Okla.,

FROM VANDEVENTER & ROYSDON, Merrick, Okla., successors to the Hardware, Stove, Implement and Paint business of Vandeventer Brothers.

FROM ANKCORN HARDWARE COMPANY, Palouse, Wash., which is erecting a new building to be used as a tinshop and storeroom.

FROM BEN BLUM & Co., Galveston, Texas, who have just established a jobbing Hardware business. Mr. Blum was formerly treasurer of Blum Hardware Company.

THE CARVER FILE COMPANY, which is putting the finishing touches on its new File manufacturing plant at Frankford and Allegheny avenues, Philadelphia, Pa., now has its forging department in full operation, making 600 dozen blanks daily. While a few styles and sizes of Files will be ready for the market during the present month, it is hardly expected that the plant will be working up to its full capacity, 500 dozen finished Files per day, until late in January.

IN connection with the new catalogue recently issued by Crandall Cutlery Company, Bradford, Pa., special attention is called to the company's Radium Electric Finish, which is applied to its Pocket Knives and other goods and prevents rust and corroding. Two important specialties with the company are the automatic Pocket Knife and automatic Razor Strop.

SAMSON CORDAGE WORKS, Boston, Mass., has recently removed its office to 88 Broad street, where better and larger facilities for taking care of its constantly increasing business are provided.

TRADE WINNING METHODS

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

CHRISTMAS ADVERTISING.

BY H. A. JOHNSON.

JUST at this time, when Christmas buying amounts to a business, when mankind and womankind of high or low degree are hurrying and scurrying to buy gifts, it behooves the Hardwareman to be vigorously active in his effort to corral his share of the purchasing.

Now a great many people believe a Hardware establishment is a sort of emergency shop. If a Lock goes

THE ANGELS OF CHRISTMAS

Why is it that among the treasures of sacred art we find that all angels are men? Look through the Louvre, the Vatican, the National Gallery in London, or any of the other great centers of art for a female angel; you cannot find one. Even the juvenile myth—the Christmas saint, Santa Claus—is described as a man. Think of that!

Where are the women angels?

They exist, but they are real flesh and blood, not paint nor spirit. Ask any husband, any son, any brother, who is the angel of his home?

Is it not Mother? Or Wife? Or Sister? Whose is the sweet thoughtfulness of holiday time? Who is it that even now is planning Christmas gifts for each loved one?

Yes, indeed, it is woman who is the Angel of Christmas, and for her we have this message:

We have Christmas gifts appropriate for men, for boys, for girls, for women, for all. They are all of the substantial kind, that will last and be useful as long as the recipient is. Isn't that sort better than tawdry plush-boxed hoaxes? Get something useful! Infuse practicality into your gifts! Come to us! Let us give you ideas and we'll tell you of things to give that you never would have thought of.

ENERGY HARDWARE CO.,
71 Winter Street,
Hustlertown.

wrong or if a Tool is needed, &c., *ad infinitum*, the Hardware store offers a quick remedy. And many a Hardwareman permits his townspeople to continue in that belief. That there is

No More Necessary Store

in town he knows or should know, and it should be his constant effort to keep his stock before his townsmen and townswomen that they may know his store is a place of utility many degrees above a hospital repair shop.

To get down to the point: Christmas is here and Christmas buying is on in earnest. Now, before reading another word, read the advertisement herewith. You may or you may not like its phraseology. You are not advertising to yourself, you are advertising to human people. This advertisement contains human nature and the humans who read it may be trusted to appreciate the ad. if you use it. Now note its keynote.

It Is Women.

If you doubt the point it makes look out on the street and see the women hurrying along. They may have bundles or they may not, but you may rest assured that 99 per cent. of the women you see passing by have Christmas in their minds and hearts. 'Twould be a sorry Yuletide were women to forget Christmas. Then get this idea right into your business marrow: If you're going to make those women stop passing by your door by coming into it you simply must acquaint them with the fact that you can make it their object to remember that your store contains scores of gifts of a useful, appropriate, durable and economical character.

Don't Be Content

with selling a Sled or a pair of Skates or a Knife to a parent who has come to you only because she felt that such a thing came under the head of Hardware. That same person will make other gifts, rest assured of that. Why not make a bid for more of her purchases? You have goods suited for husband, father, mother, brother, sister. She cannot be expected to know this nor will she think of it unless you scatter your advertising seed in a way that will take root broadcast.

All this means advertising. Do the department stores insert a piece of copy and let it stand for a month, or even a week? Well, hardly. So you must do as they do; change your advertisements every day or every other day, and shoot Christmas buying ideas out over your town as though your lasting until January 1 depended on it. And business will follow your ads. as sure as day follows night.

Your Ads. Must Be Written

in a chatty, convincing way. Talk naturally in them, just as if you were talking to a customer. Don't fill your ad. with big, black type. Type in itself doesn't mean anything. Its size means nothing. It's what it is made to say that determines whether it will send customers to your store or not. But between now and Christmas advertise good and hard. Change your ad. every other day, anyway, sing a cheerful song, always remembering that men make the money, while women spend it; therefore you must win the trade of gift-buying women.

CHRISTMAS BOOKLET.

TO call attention to the many useful articles comprised in its stock which are suitable for Christmas gifts, Barrett Hardware Company, Joliet, Ill., has prepared an

Front Cover of Barrett Hardware Company's Christmas Booklet.

interesting and attractive booklet, which has been given wide circulation among buyers in its vicinity. The booklet is printed on light green paper and its dimensions are 4½ x 6 inches. It is embellished with illustrations,

sometimes of a humorous, but always of a practical character throughout. The front cover is reproduced herewith; also one of the pages. The booklet directs special attention to a number of lines and others are suggested, but it is remarked that many additional articles just as appropriate for the holidays will be found in the store. In an introductory the company reminds the recipient of the booklet that it desires him or her to feel

"Oh, the snow, the beautiful snow,
Give 'em a sled and see them go."
An old fashioned Christmas with an old fashioned snow—and old fashioned boys and girls—just like we used to be—and it's a sled or nothing—Santa understands that—we've stocked him up for several years—Says we have the best lot ever.
All steel frames, wood tops, 65c, 75c and 90c
Fancy curved, over top runner, $1.75 and $2.00
"Bobs," with double runners, - - 2.00
Coasters at - - - $1.75, $1.00, 90c
2

A Page from Barrett Hardware Company's Christmas Booklet.

that the invitation to visit the store is a personal one and that the company is "mighty glad to have you spend as much time as you want to looking at the articles" carried.

METHOD OF NOTING "GOODS WANTED."

IN connection with their inventory system Fred. P. Straub & Co., Evansville, Ind., have an effective and simple method of keeping track of goods wanted. This is done by merely underscoring, as they are entered on the inventory sheet, items which should be ordered for stock. This plan obviates the necessity of writing and handling extra slips or sheets which might be lost and insures the needs of the store being kept before the management until they are checked off to show that an order has been placed.

NEW JOBBING HOUSE IN GALVESTON.

IT is announced that Ben Blum has withdrawn from the Blum Hardware Company, Galveston, Tex., of which he has been treasurer for many years, and established a Hardware jobbing house under the name of Ben Blum & Co. A three-story brick building has been leased for a term of years and a complete stock of goods is being ordered, consisting mainly of Heavy Shelf and Builders' Hardware.

THE DILLON-GRISWOLD WIRE COMPANY.

THE DILLON-GRISWOLD WIRE COMPANY, Sterling, Ill., has bought the patent rights and machinery for the manufacture of the Chain Stay Fences and Gates formerly made by the Sterling Chain Stay Fence Company. The Dillon-Griswold Wire Company has also made arrangements to open a branch house at Los Angeles, Cal., January 1. It will be in charge of G. A. Dierdorf, who was the chief spirit in the Chain Stay Fence company.

SIOUX FALLS HARDWARE COMPANY'S CATALOGUE.

SIOUX FALLS HARDWARE COMPANY, Sioux Falls, S. D., has recently issued a preliminary illustrated catalogue to be followed within a year by a large general catalogue. The current book has 233 pages, each 9 x 12 inches, which the company believes is the first of its kind published in that State. A good assortment is shown from Builders' Hardware to Stoves and Metals, including Sporting Goods and similar lines. This business was established in 1901 and is exclusively wholesale.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

RICHARD DUDGEON, 24 and 26 Columbia street, New York: Catalogue of Hydraulic Jacks, Punches and Presses, Roller Tube Expanders, Steam Hammers and Hydraulic Pumps.

UNITED & GLOBE RUBBER MFG. COMPANIES, Trenton, N. J.: Catalogue of Rubber Materials for railways, steamship and mining companies; also catalogue of Rubber Mats and Matting.

GUTTA PERCHA & RUBBER MFG. COMPANY, 126 and 128 Duane street, New York: Catalogue of Mechanical Rubber Goods, Belting, Packing, Hose, &c.

B. F. GOODRICH COMPANY, Akron, Ohio: Catalogue of Mechanical Rubber Goods, Stationers', Druggists' and Electrical Rubber Goods, &c.

NATIONAL INDIA RUBBER COMPANY, Bristol, R. I.: Catalogue of Mechanical Rubber Goods, Rubber Clothing and Druggists' Sundries.

ROSSENDALE-REDDAWAY BELTING & HOSE COMPANY, Newark, N. J.: Circular referring to Camel Hair Belting and Jackson Patent Fastener; also circular price-list of Stitched Canvas Belting.

THE PRITCHARD-STRONG COMPANY, Rochester, N. Y.: Circular illustrating its Prisco Tubular Lantern.

GRAND RAPIDS MFG. COMPANY, Grand Rapids, Iowa: Booklet illustrating and describing the Never Slip Nail Puller.

CYCLE SKATE & SPORTING GOODS COMPANY, 37 Park street, New York: Illustrated catalogue relating to Buffalo Model Extension Roller Cycle Skates and Automobile Cycle Skates.

JAS. S. LONGHURST, JR., Lynbrook, L. I.: Circular devoted to Agatite, for mending enamel ware and for applying to tin, wood, iron, glass, lead pipes, cracked phonograph records, &c.

PATTERSON, GOTTFRIED & HUNTER, 146-150 Centre street, New York: A 12-page booklet entitled "Holiday Suggestions," treating of "how to gladden the heart of the automobilist, carpenter, machinist, or the mechanically inclined" and illustrating Kits of Tools designed for this purpose.

BROWN & SHARPE MFG. COMPANY, Providence, R. I.: Catalogue No. 107, containing price-lists and illustrations of Machinists' Tools. Among recent additions are Hook Rulers, Knife Edge Straight Edges, Universal Dividers, Steel Beam Trammels, and Inside Micrometer Calipers.

A. H. FUNKE, 83 Chambers street, New York, manufacturer of Acetylene Lamps and importer of Automobile Accessories: Advance sheet for 1906, containing Bugle and Chimed Horns, Auto Lamps in Projectile Shapes, Searchlights, Autolytes, &c.

A. E. Pulver & Co., Shortsville, N. Y., have purchased land adjoining their Hardware store on which in the spring they will erect an addition to their building.

INVENTORY BLANK OF SAMUEL McKNIGHT HARDWARE COMPANY.

A SPECIAL inventory blank employed by Samuel McKnight Hardware Company, Allegheny, Pa., is illustrated herewith. It is made of heavy paper of excellent quality, punched for insertion in a loose leaf binder and ruled and printed on both sides of the sheet. Columns will be noted at the right hand side of the blank for prices, extensions and totals, while columns at the left are for manufacturers' numbers, if any, and quantity as indicated.

SAMUEL McKNIGHT HARDWARE CO. Inventory Dec. 31, 1904 Folio 95

Of South Side On First Floor

MANUF'RS NO.	QUANTITY.	DESCRIPTION.	PRICE.			
28	3 1/2	Doz Mach Bolts 12 fm 11	1980	6105		
28	2 5/12	" " " 18 " 11	1980	4785		
28	3 1/2	" " " 12 " 7 3/4	2160	7560		
28	1 1/2	" " " 18 " 7 3/4	2160	3240		
				21690		
		Discount				

Portion of Samuel McKnight Hardware Company's Inventory Blank. Actual Size, 10½ x 16 inches.

INVENTORY BLANK OF FITCHBURG HARDWARE COMPANY.

THE FITCHBURG HARDWARE COMPANY, Fitchburg, Mass., employs the special inventory blank shown in the accompanying illustration. This is interesting for the completeness of its rulings and column heads and for the comprehensiveness of its detailed headings, covering all points to which reference is necessary on an inventory sheet.

Inventory Jany 1 1906 Folio

Sheet No. 1 Priced by G

Called by Smith Department Builders Hdw Extended by B

Entered by Jones Location 1st floor No Side Examined by J.

Quantity		List Price			Discount	Net Price		
5	Doz 2 x 2 Tri Butts	250	12	50				
6	" 2½ x 2½	3.	18					
12	" 3 x 3	330	39	60				
24	" 3² x 3²	4.	96					
6	" 4 x 4	5.	30					
3	" 4² x 4²	6	18					
1	" 5 x 5	750	7	50	75		5	40
10	pr 2 x 2 24 Doz		221	60		12	1	20
15	2² x 2²					13	1	95
	x 3					14	2	00

Inventory Blank of Fitchburg Hardware Company. Actual Size, 10¼ x 11¾ Inches.

CHAS. FORSCHNER & SONS, 206 East Nineteenth street, New York, have prepared a number of display boards for advertising purposes showing the evolution of one of their Damascus Brand Butcher Knives from the bar steel to the finished product. The firm reports that its increasing business with this line is a gratifying evidence of its popularity and merit and further states that its export trade is growing rapidly.

HERMANN BOKER & CO.'S NEW CATALOGUE.

HERMANN BOKER & CO., 101-103 Duane street, New York, have just issued an illustrated catalogue of 250 pages, each 11 x 8 inches, cloth bound. In front are page illustrations of their Tree Brand Works, Solingen, Germany, where they make Pocket Cutlery, Razors, Scissors, &c. On another page is a representation of their American Tree Brand Cutlery Works, Newark, N. J. On following pages are the names of the various concerns for which they are sole representatives. Among the newer goods are examples of electric welded bright coil and halter Chain, both straight and twisted links, which they handle exclusively. Important lines are their American Toilet, Horse, Fetlock and Dog Clippers. On an insert page is shown Tree Brand Cooks' Knives, which will be new for next season. Large lines of Hardware, Cutlery and kindred lines are shown, most of which are manufactured by themselves, and some of which, both foreign and domestic, they handle exclusively. There are 20 pages of Gibford's Razor Strops, for which they are sole selling agents.

HENRY M. GARLICK has resigned as president of the Morris Hardware Company, Youngstown, Ohio, and has been succeeded by Frank Hitchcock.

THE 1906 meeting of the Colorado Retail Hardware Dealers' Association will be held at Denver, February 7 and 8. Headquarters will be at the Adams Hotel.

Important Developments in Parcels Post Situation.

FROM OUR REGULAR CORRESPONDENT.

WASHINGTON, December 12, 1905.

THE present session of Congress promises to be an especially important one, so far as questions concerning postal matters are concerned. Several bills have already been introduced in Congress looking toward important changes in postal regulations and several of them aiming directly at the establishment of a parcels post. The views and recommendations of the Postmaster-General are of special significance and some of the plans which he contemplates are regarded with apprehension by those who are in favor of a continuance of existing postal methods and opposed to legislation which will be intentionally or unintentionally in the interest of the mail order houses.

The Postmaster-General's Report.

With regard to the parcels post question and the consolidation of third and fourth-class mail matter, the Postmaster-General says:

To establish a domestic parcels post in this country, where distances are so great and a uniform rate of postage is so firmly established as a sound principle of postal administration, would probably involve either a high rate of postage or a temporary deficit in the effort to compete with the several express companies thoroughly organized for handling parcels under the zone system, charging in proportion to distance carried. The parcels post would get all long-distance parcels, which would be carried at a loss, and the express companies all short-distance parcels, because zone rates would be less than postage rates. An effective domestic parcels post should be organized on the same lines, substantially, as the express companies conduct their service in this country, and as parcels post service is conducted in other countries. It would be necessary to adopt rates of postage that would meet the rates charged by express companies.

MERGING OF THIRD AND FOURTH CLASS MATTER.

It is not deemed wise, at least at this time, to ask authority of Congress for the establishment of a separate parcels post in the domestic service, but an earnest recommendation is made that third and fourth class mail matter be merged at the rate of 1 cent for 2 ounces. This could be done without the necessity of rearranging the service. All merchandise parcels not exceeding 4 pounds in weight would continue to be carried in ordinary pouches and sacks at one-half the rate now charged, and afford a great opportunity for distributing light packages to a multitude of places not reached by express companies and at a charge sufficient to reimburse the Government for actual cost of carriage.

In the event of favorable action by the Congress on the general question of a domestic parcels post it would probably be well to consider the introduction of an experimental service of this character in certain carefully selected sections of the country, where a fair test of its usefulness could be made.

Postal Notes for Transmitting Small Sums.

Following these references to the domestic parcels post problem the Postmaster-General discloses the interesting fact that a commission has been appointed in the Department to consider and report upon the advisability of recommending to Congress the enactment of legislation "supplementing our money order facilities by the adoption of a postal note as a convenient means of transmitting small sums through the mails." This is the project so long advocated by C. W. Post, the author of the so-called Post check currency system, who maintains a bureau in Washington for the purpose of manufacturing sentiment in favor of the scheme. The project is strongly backed by all the catalogue houses, as it is recognized that it would add materially to the facilities afforded the farmer and resident of the rural communities to send money away from home for the purchase of merchandise of all kinds.

Mr. Cortelyou on Rural Free Delivery.

The development of the rural free delivery service is so closely allied to parcels post and other schemes for reducing the postage rates on merchandise that the Postmaster General's remarks on the subject are of great interest to all merchants. The trade is to be congratulated upon the fact that with regard to this service Mr. Cortelyou's views are very conservative and his statement of the future policy of the Department indicates that the expansion of this service will henceforth be along rational lines and will not involve more than a reasonable annual increase in total cost. In this connection he says:

There is already a decided improvement in this service over the old conditions, when it was weighted down with abuses, but the work of reorganization and inspection must be still further prosecuted. I am confident that future legitimate extensions can be accomplished at a lower rate of expense.

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THE POLICY FOR THE FUTURE CONTEMPLATES:

1. The discontinuance without delay of any route where it is found on inspection that because of a lack of appreciation of the service the expenditure involved is unwarranted.

2. The discontinuance of all post offices, when not inconsistent with existing law, if the patrons can be adequately served by rural free delivery. This will result in many instances in saving to the Department the amount of the cancellations.

3. The substitution of every-other-day service for daily service where the patronage is not sufficient to warrant daily service, thereby discontinuing the employment of a carrier.

4. The restriction of service on routes to not more than one delivery and collection daily.

5. The requirement that conditions precedent to the establishment of rural delivery shall be a possible patronage of 100 families on a standard route of 24 miles, or a proportionate number of families on routes of less length; and that roads shall be kept in good condition, unobstructed by gates, with all streams fordable at all seasons of the year; provided that in completing the service in a county the average patronage per route shall be not less than 90 families.

6. The requirement that before a route is installed the postmaster shall certify that not fewer than three-fourths of the possible patrons have provided for improved rural mail boxes.

7. The requirement that all patrons not using an approved box, or a box which can be approved under the regulations, shall provide themselves with an approved one, whether the box now in use by them was erected prior to October 1, 1902, or not.

PRIVATE ENTERPRISE OF RURAL CARRIERS.

When rural free delivery was started as an experimental service and the pay of the carriers ranged from $200 up to a maximum of $400 per annum, the carriers were permitted, and to some extent encouraged, to increase their compensation by undertaking duties outside the delivery and collection of the United States mails. They were allowed to carry passengers, to solicit subscriptions, to act as agents for newspapers and to perform a general express business by delivering merchandise on the line of their respective routes. When it became evident that the experimental service would soon have to be accepted as a permanent feature of postal administration and when Congress with that object in view gradually increased the maximum pay of rural carriers to $600 and then to $750 per annum, a corresponding curtailment of the outside privileges was attempted. Under authority conferred by the act making appropriation for the postal service for the fiscal year 1905, approved April 25, 1904, the Postmaster-General, on June 8, 1904, issued an order (No. 569) providing that no mailable matter should be handled by rural carriers while serving their routes, unless the proper postage had been prepaid and that they should not during their hours of employment carry merchandise for hire, except at the request of and at the cost of their patrons, and then only when by so doing they would not interfere with their official duties. Experience has shown that it may be desirable to restrict even this limited authorization.

It is an interesting fact that the Postmaster-General does not refer in his report to the DeGraw project for permitting the delivery of mail matter on rural routes by box number only, and it is believed that the suspension of this order practically closes the incident. It is interesting to observe that the Department not only contemplates no action designed to remove the restrictions upon the private enterprise of rural carriers but actually has under consideration the further curtailment of the private work now authorized.

Text of the Hearst Parcels Post Bill.

The Hearst bill for the creation of a domestic parcels post was the first measure relating to so-called "postal reform" presented in the new Congress. It was introduced on the opening day of the session, and as it appears to have been chosen by the advocates of a parcels post to supersede the Henry bill, from which it differs somewhat, its text is here presented as follows:

THREE CLASSES.

Be it enacted, &c., That mail matter shall be divided into three classes: First, sealed matter. Second, periodical publications. Third, merchandise.

Sec. 2. That mailable matter of the first and second classes shall embrace the matter now included therein by law.

Sec. 3. That mailable matter of the third class shall embrace merchandise, books, all documents styled commercial papers by the Universal Postal Union Convention, and all other matter not embraced in the first or second class, not hereinafter prohibited, and not above the weight provided by law, which is hereby declared to be 11 pounds for each package thereof.

RATES ON THIRD CLASS MATTER.

Sec. 4. That all matter of the third class shall be subject to a postal charge at the following rates: On parcels not exceeding 3 ounces, 1 cent; on parcels over 3 ounces and not exceeding 6 ounces, 2 cents; on parcels over 6 ounces and not exceeding 9 ounces, 3 cents; on parcels over 9 ounces and not exceeding 12 ounces, 4 cents; on parcels over 12 ounces and not exceeding 1 pound, 5 cents; on parcels over 1 pound, 2 cents for each additional pound or fraction thereof. No parcel shall exceed in length 3½ feet, nor in length and girth combined 6 feet.

INDEMNITY FOR LOSS.

Sec. 5. That for the greater security of mail matter of the third class the Postmaster-General may establish a uniform system of registration, and as a part of such system he may provide rules under which the sender or owner of third-class registered mail matter shall be indemnified for loss thereof in the mails, the indemnity to be paid out of the postal revenues. On all such unregistered prepaid parcels without declared value an indemnity up to $10 shall be paid for loss thereof in the mails, but in no case shall the indemnity exceed the actual value of the parcel. On all such registered parcels of declared value on which fees for registration, insurance and postage have been prepaid an indemnity for loss thereof in the mails shall be paid amounting to, but in no case exceeding, the actual value of the parcel.

Fees shall be charged for such registration and insurance as follows: Eight cents for registration and insurance up to $25; 2 cents for each additional $50 of insurance.

UNMAILABLE MATTER.

Sec. 6. That the following matter is declared to be unmailable: Poisons and explosive or inflammable substances; substances which exhale a bad odor; articles which are calculated to damage or destroy the mails or injure persons handling them; matter appertaining to lotteries or fraudulent schemes or devices; matter which is declared unmailable under the provisions of section 3893 of the Revised Statutes, as amended by the act of July 12, 1896.

Sec. 7. That all acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Sec. 8. That this act shall take effect six months from and after its enactment.

The Henry Bill

for a parcels post was presented on the third day of the session and was accompanied by a bill drawn to meet the recommendations of the Postmaster-General and the Third Assistant, Mr. Madden, with regard to the consolidation of the third and fourth class matter at the rate of 8 cents per pound. He also introduced a measure "to secure the use of the United States rural mail equipment and to place the rural service on a paying basis." This bill, which is backed by the Postal Progress League, provides simply for a sort of rural free delivery parcels post, its text being as follows:

Be it enacted, &c., That within the limits of the respective rural routes served by post wagons parcels of mail matter shall be collected and delivered house to house by the carriers in weight up to 200 pounds and in dimensions up to a barrel; no parcel, however, to be more than 6 feet in length.

Sec. 2. That the rates on parcels thus collected and delivered on the rural routes served by post wagons shall be as follows: Parcels up to 8 ounces, 1 cent; parcels over 8 ounces to 1 pound, 2 cents; parcels over 1 pound to 11 pounds, 5 cents; parcels over 11 pounds to 30 pounds (half bushel), 10 cents; parcels over 30 pounds to 60 pounds (bushel), 15 cents; parcels over 60 pounds to 100 pounds (half barrel), 20 cents; parcels over 100 pounds to 200 pounds (barrel), 25 cents.

Sec. 3. That this act shall take effect on the first day of July, 1906.

One-Cent Postage.

As soon as Representative Smith of Illinois was informed of the introduction of the Hearst and Henry parcels post bills he redrafted the penny postage measure presented by him in the last Congress and promptly reintroduced it in the House. The text is as follows:

Be it enacted, &c., That from and after July 1, 1896, the rates of letter postage shall be as follows: On all letters weighing 1 ounce or less the postage to be paid from any place or point in the United States to any other place or point therein, and on all drop letters, shall be 1 cent, and for each additional ounce or fraction thereof the postage shall be 1 cent additional.

Mr. Smith is authority for the statement that his bill will be urged upon the attention of the House Post Office Committee without regard to the parcels post fight, although he recognizes that it will gain much strength as an alternative for a costly project that would be of advantage to a comparatively small number, while penny postage would benefit every letter writer in the country.

Parcels Post Opponents Must Act Promptly.

All the bills relating to the postal service have been referred to the House Post Office Committee, where they will be taken up for consideration after the holiday recess. The plans of the framers of all these projects will be: First, to endeavor to have them attached as "riders" to the annual post office appropriation bill; and, failing in this, to have them brought forward as independent measures. The progress made will be carefully noted, and the readers of *The Iron Age* will be promptly advised of any important changes in the situation that may occur from time to time. The opponents of a domestic parcels post should lose no time in taking the matter up with their Senators and Representatives in order that Congress may understand the views of the business men of the country on this exceedingly important issue.

W. L. C.

The Catalogue House Question.

A LETTER FROM THE JOINT COMMITTEE.

St. Louis, Mo., December 10, 1905.

To the Editor: The stereopticon photographic views illustrating catalogue house prices and methods were given at the first session of the convention of the National Hardware Association at Washington. This was an open meeting and was attended by about 500 manufacturers and jobbers; the entire Catalogue House Committee, including jobbers and retailers, was present.

At the conclusion of the stereopticon views the chairman of the Joint Catalogue House Committee stated it was the sense of the committee that enough public educational work had been done and that in future the work of the committee should be carried on along other lines. It was recommended by the committee that the catalogue house question should not again be considered in an open convention; in fact, that publicity should be avoided.

ON ACCOUNT OF SOME OF THE WRONG IMPRESSIONS

that have either unintentionally or intentionally been disseminated through the columns of the trade press since the Washington meeting the Joint Committee has called upon me as chairman to make a public statement in reply to some of the articles that have appeared in the trade press.

It was the desire of the National Hardware Association to have a

FULL, FREE AND OPEN DISCUSSION

of this catalogue house question at the Washington meeting. An invitation was extended to the president of the American Hardware Manufacturers' Association to appoint three speakers to represent the manufacturers at the open catalogue house session. This invitation was not accepted. When the officers of the National Hardware Association in the East could not secure any manufacturers to speak on this occasion a letter was written to me, as chairman of the Joint Committee, to see Mr. Birge, president of the American Hardware Manufacturers' Association, in St. Louis. I telephoned Mr. Birge that we would be glad to have him appoint three speakers. He did not give me a definite reply, but said he would call on me the next day and talk over matters. He did not call and that evening I left for Washington. It was very evident the manufacturers did not care to have any speakers on this subject at the open session.

AN INDIGNANT MANUFACTURER.

The Catalogue House Committee meeting was held in the morning. That afternoon a manufacturer came to me and stated he was very indignant because he had not been given an opportunity of explaining his line of goods as shown and priced by the catalogue houses. I immediately went into the convention room, where the jobbers were holding an executive session, and stated what this manufacturer had said to me. Upon a motion, which was carried unanimously by the convention, Mr. Bigelow, president of the National Hardware Association, at once appointed a committee to extend an invitation to the manufacturers to have their members reply on the catalogue house question either in an open meeting of manufacturers or an open meeting of jobbers. The manufacturers sent back a letter in which they stated none of their members desired to make any reply.

MR. PRATT'S "OPPORTUNITY."

All the meetings of the manufacturers were executive. Mr. Birge's address and the paper by Mr. Pratt of the Goodell-Pratt Company were given to the manufacturers only. It was stated that Mr. Pratt prepared his paper to be given at the jobbers' session, but that he did not have a chance of doing so. If Mr. Pratt desired to speak the jobbers were not notified to that effect, and he did not rise in the meeting and state that fact. The jobbers did not expect any manufacturers to speak, because the invitation to them to speak had not been accepted. The jobbers did not know the contents of Mr. Birge's address or Mr. Pratt's paper until after the convention adjourned, when they read them in the trade press. Under the circumstances the statement that Mr. Pratt did not have an "opportunity" of speaking in the jobbers' meeting is incorrect.

During the course of the stereopticon views one manufacturer (Mr. Smith of Smith & Hemenway Company) rose to correct an error that had been made in the price of one item. He was given the floor, and when he had finished speaking I thanked him for his remarks and extended an invitation to any other manufacturer to criticise or correct any figures or facts presented.

MORE THUNDER THAN LIGHT?

The president of the Manufacturers' Association evidently prepared his address before he left home. It seems he expected a flight of oratory on the part of the jobbers, in which he made a slight miscalculation. When he reaches the catalogue house subject he tells the story of an old negro who was overtaken in a thunderstorm in a forest. His prayer is: "Oh, Lawd, if it's jest the same to you, I'd rather have a little less noise and a little mo' light!" The president then adds: "We have heard the continued thunders, peal after peal, but we need a little more light."

I believe it will strike any fair minded man that when the Joint Committee, at the expense of a great deal of time and trouble, had provided 100 photographs taken from the pages of catalogue house catalogues, analyzing these prices and showing by actual prices, also figured out on a basis of percentages, just where the retailer stood in competing with catalogue houses, this amusing story, with the moral that the committee was providing more thunder than light on the catalogue house question, is sadly out of place and shows a desire on the part of the respected and venerable president of the Manufacturers' Association not to deal in facts, but to play for the approval of his audience of manufacturers.

ELEVEN, NOT SEVENTY-FIVE, MILLIONS.

Then Mr. Birge proceeds to say, "We need light on how it is hoped to curb the catalogue houses except by competition, so long as some merchants and some manufacturers furnish them all the goods they need, to the extent of $75,000,000 per annum." He does not state his figures ($75,000,000) cover the entire purchases in all lines of these catalogue houses. Many have therefore gained the impression that their purchases of Hardware amount to $75,000,000, when as a matter of fact we are reliably informed their total purchases in Hardware and kindred lines do not amount to over $11,000,000 per annum.

The point here is to show all this fuss is over sales of $11,000,000 worth of Hardware, Cutlery, Sporting Goods, Implements, Stoves, Vehicles, Wooden Ware, &c. The natural query is, Why do the manufacturers fight so hard to hold an amount of business that is not more than one-tenth of the sales of the 25 largest jobbing Hardware houses in the country?

PRICE DEMORALIZATION THE CHIEF DANGER.

The Joint Committee has held from the beginning that the amount of Hardware distributed by catalogue houses is not where they cause the most damage. The main danger is not in the quantity of Hardware sold, but in the demoralization of prices caused by the distribution of their catalogues in all parts of the country.

Just why Hardware manufacturers, for the comparatively small amount of business they receive from catalogue houses, are willing to allow them to demoralize prices on their lines over the whole United States is a question that is exceedingly hard for a reasonable man to answer. Of course when the business of one catalogue house on a certain line of goods is compared with the business of one Hardware jobber the comparison in some cases may be in favor of the catalogue house, but when the

COMBINED SALES OF ALL THE JOBBERS

in the country are taken into consideration the percentage in favor of the catalogue house is so small it is hardly worthy serious thought. There must be some reason deeper down than the mere question of volume of busi-

ness that is leading certain manufacturers to so strenuously oppose the movement on the part of the jobbing and retail Hardware trade against the encroachments of the catalogue house. This reason will be touched upon later in this article.

CATALOGUE HOUSES AS MANUFACTURERS.

Mr. Birge raises the point that if the manufacturers quit selling catalogue houses they (the catalogue houses) will manufacture their own goods. It may be said in reply to this that the catalogue houses will manufacture their own goods whenever they find it profitable to do so, regardless of whether or not the manufacturers are willing to sell them the same lines. It stands as a matter of record that before this catalogue house question was ever agitated they had commenced the manufacture of certain lines of goods.

If they do manufacture successfully the jobbers have just as much to fear in the way of lost trade as the manufacturers. The jobbers, however, do not fear the ability of the catalogue houses to manufacture successfully. Some jobbers have learned to their own sorrow that manufacturing is not as easy as it seems. We jobbers are not afraid of the catalogue houses manufacturing all the Hardware that they sell. We are willing to risk their taking the business away from us in that way.

MANUFACTURERS SELLING RETAILERS DIRECT.

It has also been threatened by certain manufacturers that they would sell goods direct to the retail trade, leaving the jobber out in the cold. We are willing to take this chance also. Of course the manufacturers can sell goods, and probably at a profit, to the retail trade in large cities where there are a great number of retail merchants in the same place, but if these manufacturers who have made these threats attempt to sell goods in the medium sized and small towns, on account of the fractional parts of dozens ordered and the heavy expense of obtaining the business, they will be glad to get their lines back into the hands of the jobbers.

NOT DISTURBED BY BUGABOOS.

Neither the "bugaboo" of catalogue houses manufacturing their own Hardware, nor the "bugaboo" of manufacturers selling direct to the retail trade, disturbs the tranquility of the general jobbing Hardware trade. When a jobber receives the weekly order from his retail customer for forty items and finds it would take fifteen different manufacturers to fill this order for $35 worth of goods, he is not much disturbed for fear these fifteen manufacturers will take this business away from him.

WHAT DID MR. BIRGE EXPECT?

In his address Mr. Birge states, "In the meantime the trumpets of rams' horns are being blown around the walls of Jericho, which refuse to fall." What did Mr. Birge expect? On account of a few resolutions on the part of jobbers and retailers did he expect the catalogue houses to go out of business? If he did he was certainly more sanguine than the members of the Catalogue House Committee.

Mr. Birge admits frankly the catalogue house is a great evil to the Hardware trade. We thank him for this admission. Allow us to ask him how much he or his association has done to help remedy this evil? He criticises and ridicules the work of the Joint Committee. Allow us to ask him what practical suggestions he has made for work along other lines?

CURBING BY COMPETITION.

He states he does not see how the catalogue houses can be curbed "except by competition." Will Mr. Birge tell us how the retail dealer can compete when the catalogue houses are buying their goods at jobbers' prices and selling them, not on a few but on hundreds of lines, at the same figures the retail dealer is compelled to pay for the same goods? Will Mr. Birge kindly tell the jobber how he can help the retail dealer compete, when on many lines the manufacturer insists on the jobber maintaining certain fixed prices to the retail trade; and when the jobber, in his desire to help the retail dealers compete with catalogue houses, sells them goods at figures very near his cost, he is then "called upon the carpet" by the manufacturer and informed if he continues to cut these prices his supply of the goods will be shut off?

A POWERFUL MINORITY.

Mr. Birge continues: "The retail merchants are encouraged to believe that we manufacturers are the evil spirits that are supporting these houses, yet it appears that few of this membership have any relations with them." We will admit that this is true. In my address at Hot Springs, Va., I stated the resolutions presented at that convention were inspired by just a few manufacturers who were selling catalogue houses. The wonder of the jobbing Hardware trade of the country is that these few manufacturers who have relations with catalogue houses seem to control the policy of the American Hardware Manufacturers' Association.

Mr. Birge is careful to state that the company with which he is connected does not sell catalogue houses. This is true. No company has worked better with the jobbers than the Shovel combination. They deserve the jobbers' thanks. But why in the world are not the manufacturers who do not sell catalogue houses as aggressive in the interests of their customers, the jobbers, as the manufacturers who do sell catalogue houses are aggressive in opposing the efforts of jobbers and retailers in this movement? Why do they criticise without helping? Why do they knock without boosting?

When we consider the large number of manufacturers, members of the American Hardware Manufacturers' Association, who do not sell catalogue houses and the small number who do sell catalogue houses we cannot but express our surprise to see this minority apparently controlling the policy of the association. In other words, why should the tail wag the dog?

A NEWSPAPER ADVERTISING CAMPAIGN.

According to Mr. Birge the officers of the Manufacturers' Association did not know the secret plan that was put on foot against jobbers' special brands. This plan must have been brought to life and nurtured by this same small minority. The plan to which Mr. Birge refers was for a number of manufacturers to conspire together secretly to advertise in all trade journals against jobbers' special brands. It was part of this plan that these same manufacturers should continue to call on jobbers and solicit their business on special brands, and at the same time put $50,000 into a fund to pay for articles knocking these very brands. In other words, such a manufacturer would go to a jobber and assure him if he could secure his order for special brands he would give him his very best quality of goods, and then this same manufacturer would, through an advertising bureau, advise the public these same goods were not first quality. One manufacturer who received this secret communication was so disgusted he showed it to a friend of his who is a jobber. The plan was exposed and died a-borning.

PERSONAL ATTACKS.

Now, it is the general opinion that these same Judas-like manufacturers, this small minority, are to-day using a certain trade paper that is willing to lend itself to their purpose, to not only criticise the policy and principles of the Joint Committee but to stoop to unlimited personal abuse and villification of the members of this committee. In turn three of the members of the Joint Committee have been exposed to the personal attacks of this paper. Is it not reasonable to conclude that the same standard of honor that inspired the proposed campaign against jobbers' special brands is also inspiring these personal attacks through this trade paper?

We honor and respect Mr. Birge as president of the Manufacturers' Association for disowning and discrediting the work of these members of his own association. We refer to these personal attacks not from choice, but because we believe it is to the interest of the cause in which we are engaged that not only jobbers and retailers but also the fair minded and honorable manufacturers of the country should know what this committee is up against in its efforts to improve the general conditions of the manufacturing, jobbing and retail Hardware trade.

MANY ANONYMOUS LETTERS

have appeared in the trade press from "Manufacturers" criticising and condemning the work of the Joint Committee. How easy it is for just a few of these radical manufacturers to inspire letters of this character! How easy it would be for the members of the Joint Committee to see that the trade papers were flooded with communications from our friends giving our views! As we have stated before, we have little respect for these anonymous communications. The act of a manufacturer who will loudly proclaim his right to have his name on his own goods and then is too discreet or has not the courage to signs his own articles leads one to ask the question, "Should not an honest and courageous manufacturer who desires to brand his own goods also brand with his own name his own opinions as expressed in a trade journal?"

TOO MUCH PROFIT?

In his address Mr. Birge implies that jobbers and retailers make too much profit on their goods, and to back this up tells the story of one Pocket Knife that was purchased in a retail store in Michigan on which there was a profit over the cost to the jobber of 150 per cent. A life insurance company might as well base its tables of mortality on the life of one man as to draw a conclusion like this from the sale of one Pocket Knife.

If the jobbing Hardware business is so profitable, why do we not have more jobbers? Where are all the Hardware jobbers that were in the cities of St. Louis and Chicago 25 years ago? There are only a few left.

THE PLAIN TRUTH

is the net profits in the jobbing Hardware business are so small, the cost of doing the business so heavy and the labor so great, many houses have preferred to close out of business and take their chances in other lines. No jobbing Hardware house can continue to exist to-day except under the most thorough, economical and painstaking management. What man in the Hardware trade to-day who is posted will claim that the retail Hardware merchants of this country are making an exorbitant profit as compared with retailers in other lines of business? Naturally, on some lines of Hardware there are better profits than on others; this is true of all trades. We do not expect to buy our tea or fancy jellies from our grocery dealer on the same percentage of profit he sells us our flour or sugar. Mr. Birge's illustration of the Pocket Knife hardly strikes me as being up to the same standard as some other portions of his "masterly address."

"COERCIVE METHODS."

It has been stated that manufacturers object to what are called "coercive methods" on the part of the Joint Committee. Those who have read the addresses of Messrs. Bogardus, Miles and Bush at Washington will observe they are all appeals to the manufacturers to help us correct the catalogue house evils, the gravity of which all seem willing to admit. Mr. Bogardus especially called upon the manufacturers to meet us in a spirit of friendship. Now we ask those who have read the addresses of the manufacturers, "Have we been answered in that spirit?"

When Mr. Birge seeks to ridicule the Joint Committee by his story of the Walls of Jericho, when he leaves the impression that the manufacturers are being coerced, we claim he is giving a wrong impression to the Hardware trade of the country; he is leaving the impression that the Joint Committee is arbitrary and dictatorial in its demands and coercive in its methods when such is not a fact.

AN INJUSTICE.

We went to Washington to lay before the manufacturers the facts as they existed. The only addresses on the catalogue house subject were made by three retail members of the Joint Committee. These addresses were of the most friendly and conciliatory character, and for the manufacturers to attempt to give the impression to the trade that we appeared in Washington in any other spirit is doing the Joint Committee a grave injustice. What did hurt was not our addresses, but the facts, figures and names shown up with the stereopticon views.

SELLING SYSTEMS.

In considering the question of coercion the Hardware trade must not forget the methods that have been used by manufacturers in the past. Have any of us ever heard of a selling system by which jobbers were compelled to obtain certain prices or forfeit their rebates? Have we ever heard of a Shovel association which compelled jobbers not only to pay certain fixed prices but to buy all their Shovels from this association upon penalty of having their supply cut off and their rebate withheld if they bought from outside manufacturers? Do we know of any other such associations that exist in the Hardware trade to-day? Have jobbers ever gone over their lines of goods and counted those lines upon which prices are controlled by the manufacturers?

FOR THE COMMON GOOD.

Have the jobbers in these cases submitted to coercion? It may be that all of us are entirely satisfied with these arrangements; it may be we believe such arrangements are for our mutual interest and welfare. We may submit to this method of coercion cheerfully and gracefully, believing it is for the common good. But when we jobbers and retailers, in turn, go to these same manufacturers and ask them in a friendly spirit to help us out, is it exactly fair for them to turn upon us through the trade press with cries of "coercion," "illegal," "un-American" and other similar expressions?

OTHER DEMANDS WOULD FOLLOW.

One very prominent manufacturer, who is a member of the Manufacturers' Association and who sells to a catalogue house, said to me, "In this catalogue house contention you jobbers and retailers are just right; I don't blame you; the interests of your business are at stake. If I thought the solution of this catalogue house question would end the matter, I would submit gracefully to your desires, but I see very clearly if you win this contention other demands will be made upon the manufacturers. Therefore we have decided we might as well fight you now as to fight you later." I admire this manufacturer for his frankness. He said if we won in this catalogue house fight the next thing we would take up would be the question of manufacturers selling the outside trade.

I wonder how much this thought and spirit have to do with the opposition the Joint Committee is encountering from certain quarters at this time? It is worthy the careful thought of the trade when they consider some of the criticisms and abuses which have been hurled against this committee.

COMMITTEE'S POLICY STRICTLY LEGAL.

It has been claimed by certain manufacturers and openly in the trade press that the policy of our committee was dangerously approaching illegal lines. Our attention has been called to the Loder Drug case recently decided in Philadelphia. The ruling of the Federal Judge in this case shows clearly our committee has conducted itself strictly within our legal rights.

Any jobber or any retail dealer has a perfect right to buy or not to buy any line of goods he pleases. If a manufacturer sells a catalogue house and permits that catalogue house to sell his goods at unprofitable prices it is the right of any jobber or retail dealer who is a member of an association or who is not a member of an association to quit selling such goods and to quit buying them, if he considers it to his interest to do so.

WE ARE CLEARLY WITHIN OUR RIGHTS

when by stereopticon views or by addresses or in any other form of communication we post the general trade of the country on any subject. We are clearly within our rights if we bring to bear our powers of persuasion upon the trade not to purchase certain lines. All these points are brought out very clearly in the Loder case.

We are not within our rights and would be acting in an illegal manner if, as a number of individuals or as an association, we attempted to compel or coerce against his desire any jobber or any retail dealer to discontinue car-

rying any line of goods because they were sold by a catalogue house. We would be acting illegally if we attempted to compel or coerce any manufacturer to quit selling catalogue houses.

WE HAVE A PERFECT RIGHT

to express to the manufacturers our opinion that the best cure of the catalogue house evil is for manufacturers to quit selling catalogue houses. We also have a right if, following out his own individual desires, such a manufacturer should continue to sell catalogue houses, of our own free will, without coercion from others, to quit dealing in his line of goods. The whole essence of the ruling in this Loder case is that individual liberty of action should be preserved.

NO COMBINATION OR AGREEMENT ON PRICES.

It must also be taken into consideration by those who have compared the policy of the Joint Committee with that of the druggists' associations that there is no combination or agreement in regard to prices in either jobbers' or retailers' associations. The jobbers of this country have no agreement between themselves in regard to prices, nor have the retail dealers any such agreement. On this very vital point no comparison can be made between the Hardware associations and the associations of druggists.

ANOTHER ADDRESS

the trade had the pleasure of reading in the press after the convention at Washington was that of Mr. Pratt of the Goodell-Pratt Company. This is the address that the manufacturer did not have an "opportunity" of presenting at the jobbers' meeting. I would be glad to take up this address in detail and answer the various points raised, but I am afraid this article is already too long.

Mr. Pratt strikes the attitude of Ajax defying the lightning. As "coon" stories seem to be in order, I am reminded of a story I have heard of General Sherman's army marching through Georgia. A dog ran out of a cabin and began to bark furiously at the passing soldiers. Next came a colored boy, his master, who called out, "Come back here, Tige, don't bite the army."

AS A MATTER OF FACT

from the best information we can obtain, Mr. Pratt has very little business with jobbers; he therefore has nothing to lose from this source. In light of this fact his red badge of courage has just a slight tinge of green. Mr. Pratt sells very largely to the retail trade; in fact, I was told he not only seels the retail trade and catalogue houses, as he so valiantly admits, but also sells direct to consumers. In light of these facts I think it unnecessary to make any further remarks in reply to Mr. Pratt's paper on the catalogue house subject.

A LETTER THAT STARTED TROUBLE.

To my critics I must plead guilty of having written the letter published in *The Iron Age*, April 7, 1903. That letter seems to have started a good deal of trouble. As a result of it wee were honored by invitations to join the National Hardware Association and the Southern Hardware Jobbers' Association; also to join a combination of independent jobbers to carry on this catalogue house work. We decided to join the National Hardware Association. The Wholesale and Retail Hardware Joint Committee was created, composed of seven jobbers and five retailers. The jobbers on this committee represent the National Hardware Association and the Southern Hardware Jobbers' Association, the retail dealers the National Retail Hardware Association.

CAMPAIGN OF EDUUCATION.

There was so little actual knowledge on this catalogue house question that before any work at all broad in its scope could be accomplished it was necessary to carry on a campaign of education. What was being done by the catalogue houses was not fully understood by manufacturers, jobbers or retailers. This educational campaign was conducted by means of the trade press, pamphlets and through addresses at conventions of jobbers and retailers.

THE COMMITTEE HAS BEEN ACCUSED

of too much publicity. We are responsible for some of this publicity; most of it has been absolutely beyond our control. It has been claimed this publicity has helped catalogue house sales in the Hardware line. I am informed by a number of manufacturers who openly sell catalogue houses that the business of these catalogue houses has decreased the past year.

WHAT THE AGITATION HAS DONE.

I have systematically inquired on this subject of a number of manufacturers and as a result of these careful inquiries I feel safe in making the statement that not only has the business of catalogue houses not increased in the Hardware line in the past two years, but by reason of the agitation of this catalogue house question their business has decreased and they have been very much embarrassed in obtaining their supplies. For instance, I was told by a manufacturer that in an effort to keep up their stock of Planes of a certain manufacturer who had declined to sell them one catalogue house is obtaining these Planes from 20 different sources. Any jobber can realize how difficult it would be for him to keep up his stock under such conditions.

CATALOGUE HOUSES UP AGAINST IT.

We know beyond any question of doubt that on many lines the catalogue houses are having great difficulty in obtaining supplies and that they are not filling orders. We know that in the buying of their goods, instead of being in the position they were a few years ago, of bulldozing the manufacturers into extreme prices, their entire buying attitude has changed and it is now not a question with them of obtaining a low price, but a question of getting the manufacturers to supply them with the goods. Every business man knows goods cannot be bought to advantage under such conditions.

EXTREMES IN POLICY.

Another interesting condition has developed. One of the two large catalogue houses in Chicago has adopted a fighting policy; they are showing their teeth to the manufacturers; they are cutting prices. The other catalogue house has adopted a policy of conciliation; they tell the manufacturers they are willing to do whatever they want them to do in the way of maintaining prices. A comparison of prices in the two catalogues will show one house is obtaining a great deal better prices on Hardware and kindred lines than the other. One house, as a result of its policy, has gotten out of line with almost all the first-class manufacturers in the country, while a number of the best manufacturers are selling the other house on account of the attitude they have taken.

A COMPARISON OF THE TWO RECENT CATALOGUES

of catalogue houses issued shows clearly many standard manufacturers' lines have been dropped; their places have been taken in many instances by goods bearing the catalogue house special brand. On other lines that are shown under manufacturers' brands prices have been substantially advanced.

WE CLAIM THESE CONDITIONS HAVE BEEN BROUGHT ABOUT

as a result of the short time the Joint Committee has been at work on this subject; they have been brought about as a result of education and publicity. We claim retail dealers all over the country have been aroused to the necessity of active opposition against catalogue houses. We claim this public agitation has not only led to the education of the retail dealer in the best methods of competing with catalogue houses and keeping the business at home, but has led to his education and improvement in other directions. We claim the agitation of this subject has led to a better understanding and more friendly feeling between jobbers and retailers than ever before existed. We also claim it has led to a large increase in the membership of retail State Hardware associations and also to an increase in the ranks of association jobbers.

STIMULATING RETAILERS.

The manufacturers have often, through their anonymous articles, claimed the Joint Committee should use its influence to stimulate the selling ability of the retail trade. These manufacturers do not seem to be aware that the Joint Committee was represented at nearly all last year's conventions of retail Hardware associations and that this subject was fully discussed

by them, and that the retail merchant was told his faults in plain language, was encouraged to form town associations and to use every honorable and legitimate method to keep business at home. Not only were these things done, but the retail merchants were told to see the editors of their town papers and have the right kind of articles written in order to give more light on this catalogue house subject to local consumers. All these things and many more of the same kind have been done by the Joint Committee, working through conventions and through retail dealers affiliated with their associations.

CRITICISM OF THE CHAIRMAN.

In conclusion, let me say personally, as chairman of the Joint Committee, I expected aggressive work along these lines would bring a fair share of criticism. Those who have read the trade papers will see I have had no serious cause for disappointment. The only criticism that has hurt has been from some of my fellow jobbers. Some of these jobbers, I am told, have criticised me rather severely for obtaining too much advertising out of the Washington and previous conventions.

It may be interesting for some of these gentlemen to know that, fearing the work of the Joint Committee might be hampered by just such a feeling on the part of my fellow jobbers, at the meeting of the committee in St. Louis several months ago I offered

MY RESIGNATION AS CHAIRMAN,

and gave as my reason that I thought it was time for some one else to take my place and get the benefits of some of the valuable advertising our house and I personally had been receiving. The Joint Committee unanimously refused to accept my resignation. I then remained as chairman with the distinct understanding I would be relieved from the committee as chairman at the end of our committee year, July 1 next.

When we went to Washington it was my desire to have a retail member of our committee conduct the stereopticon views. In a meeting of the committee in Washington just before the views were given this proposition was turned down and they insisted upon my giving them.

With a view of avoiding criticism of this nature I prepared no address for Washington; therefore none was given to the trade press. As stated above, the only addresses by the Joint Committee were made by the retail members, Messrs. Bogardus, Miles and Bush.

The past year in the interests of this catalogue house work I addressed about a dozen retail Hardware conventions in as many different States. At the St. Louis meeting of the Joint Committee several months ago I stated that the coming year I would not accept an invitation as chairman of the committee from a single retail Hardware State association, and that if I were invited I would call upon some other member to represent the committee. I have already received several invitations from these State associations for their coming conventions. I have declined these invitations personally, but have written I will be glad to be represented by some other member of our committee.

ILLUSTRATED CATALOGUE HOUSE LECTURES.

It may be of interest to state here that the retail Hardware dealers have grasped the advantages of the stereopticon in giving a catalogue house lecture and that a number of States are providing themselves with these stereopticon plates. Therefore the magic lantern and the catalogue house question will be an interesting part of each of the coming retail Hardware State conventions.

Let me say finally it is my hope I will be retained as a member of the Joint Committee. I am willing to serve as a private in the rear rank. Whoever is elected chairman, be he jobber or retailer, will receive my best support.

I have nothing but words of appreciation for the loyal support I have received at all times from the jobbing and retail members of the Joint Committee. We have worked together in remarkable harmony. No important move has been made without the concurrence of the entire committee. The work of the Joint Committee

HAS NOT BEEN A ONE-MAN AFFAIR,

as a trade paper recently stated. The committee has accomplished a great deal more than I expected in the short time we have been at work. Every intelligent jobber and retailer in this country sees the necessity of this work being aggressively but wisely continued.

We take this occasion to express our thanks to the officers and members of the National Hardware Association for their confidence and unwavering support in this Joint Committee work; also to the officers and members of the National Retail Hardware Association. The retail members of the committee have acted with rare discretion and good sense.

I thank the Southern Hardware Jobbers' Association for the invitations I have received to attend two of their conventions and for their support and encouragement in our work.

The Iron Age deserves our thanks for fair treatment and dignified and impartial criticism.

To the great majority of Hardware manufacturers we express our appreciation of their friendship and of many personal acts of kindness and goodwill.

AN ENCOURAGING SITUATION.

The mere fact that just at this time the Joint Committee is experiencing some severe criticism inspired by our enemies to my mind is the best indication that our work is becoming effective. Some of our opponents have awakened to the fact that we can and have accomplished substantial results. Some of those who in the beginning said "What can we do?" are now realizing what we have done and that a great deal more can be accomplished. The object of those who for various reasons are opposed to this movement is to incite envy, malice and jealousy in our ranks and thus bring to an end the efforts they saw they could not oppose openly in a manly and straightforward manner. Personally I never felt more encouraged than at present. Things are coming our way. It is only necessary for the jobbers and retailers to stand together.

Again we call on all manufacturers who are interested in the welfare of the jobbing and retail Hardware trade to come over to our side and help us.

THE WHOLESALE AND RETAIL HARDWARE JOINT COMMITTEE,
S. NORVELL, Chairman.

SCRANTON BOLT & NUT COMPANY.

OPERATIONS were begun on the 4th inst. in the new mill of the Scranton Bolt & Nut Company, Scranton, Pa. The new mill is a steel structure, 122 x 200 feet, and is fire proof. Additional equipment has been added to both the 10 and 18 inch mills so as to increase the range of sizes. The 10-inch mill has been converted into a Belgian mill and the 18-inch into a complete bar mill. Three modern furnaces with vertical water tube boilers and Allis engines have been installed. After January 1 the company will be a factor in the Bar Iron business, and will have from 20,000 to 25,000 tons a year to place upon the market, the balance being consumed in the Bolt and Nut department. Additional facilities for handling and preparing the raw material have also been provided. The company will have about 600 persons on the payroll after the first of the year.

LANDERS, FRARY & CLARK'S CUTLERY AND HARDWARE CATALOGUES.

LANDERS, FRARY & CLARK, New Britain, Conn., and 302 Broadway, New York, has just issued two new illustrated and descriptive trade catalogues. Catalogue No. 24, of 222 pages, is a comprehensive exposition of fine Table Cutlery, Butchers' Cutlery and Tools, and Knives for a large number of diverse purposes. Another catalogue, No. 25, containing 205 pages, relates to the company's Hardware lines such as Coffee Mills, Lard and Fruit Presses, numerous Kitchen Utensils, Scales and Balances and Bibs and Cocks. Special attention is called to its lines of patented household Hardware, trademarked Universal, including Food Choppers, Bread and Cake Mixers, Coffee Percolators, &c.

THE SIMONDS FILE COMPANY.

THE SIMONDS FILE COMPANY, Fitchburg, Mass., recently incorporated under Massachusetts laws, has taken over the plant and business of the Fitchburg File Works, maker of Files, Hack Saws, Hack Saw Frames and kindred articles. The officers of the new corporation are: Daniel Simonds, president; Walter E. Culley, vice-president; Albert E. Culley, treasurer; John E. Kelley, secretary. These, with Gifford K. Simonds, Alvan T. Simonds and T. F. Howarth, constitute the Board of Directors. The Simonds File Company will be closely associated with the Simonds Mfg. Company, the well-known maker of Simonds Saws and Machine Knives. The new company starts with a large business already built up by the Fitchburg File Company, and by its association with the Simonds Mfg. Company and the use of the latter's numerous branch offices and efficient selling force it is planned to largely increase the business in Files and Hack Saws.

U. T. HUNGERFORD BRASS & COPPER COMPANY'S HANDBOOK.

U. T. HUNGERFORD BRASS & COPPER COMPANY, Pearl and Park streets, New York, has just issued a valuable handbook of Seamless Brass and Copper Tubes, which will be found helpful to both merchants and metal workers. It is cloth bound, contains 105 pages, each 7 x 4½ inches, and in concise form describes the methods of manufacture and uses to which such Tubes are applicable, having in mind the best way to select proper material as well as eliminate waste. A large part of the work is given to price-lists, tables of weights and useful rules for architects, engineers, master mechanics, plumbers, steam fitters, coppersmiths and other artisans. In this connection the house carries constantly in stock from 1,500,000 to 2,000,000 pounds of metals of various kinds and shapes for prompt delivery.

TOOLS OF BUSINESS.

THE BOOKKEEPER PUBLISHING COMPANY, Detroit, Mich., has just issued an interesting book entitled "Tools of Business," edited by E. H. Beach, which is intended as an encyclopedia of office equipment and labor saving devices. It has stiff covers, red leather back and contains 211 pages, each 10½ x 7¾ inches. An immense variety of office helps are illustrated and described, with accompanying names of manufacturers. Thirty columns of index permit quick reference to makers or business devices put on the market by them.

MISCELLANEOUS NOTES.

Light Weight Barb Wire.

Dillon-Griswold Wire Company, Sterling, Ill., is now prepared to furnish a light weight Barb Wire. It is made of No. 14 wire and put up in 80 rod spools. So far as introduced, the company states, it has proved very popular with the trade.

Bell Poll and Lathing Hatchets.

The Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, has recently put on the market several new lines of hatchets, which differ in various ways from staple lines of hatchets long made by the company. One group is adze eye, bell poll and full polished in both shingling and half styles. They are forged from crucible steel, hickory handled, finely finished and each is made in two sizes. Nos. 220 and 221 shingling have bit widths of 3⅜ and 3⅝ inches resepectively. The half hatchets, Nos. 230 and 231, are 3⅛ and 3⅜ inches wide, respectively. There are likewise four new styles of lathing hatchets, Underhill, Boston and Philadelphia patterns, and an Underhill pattern with larger poll. All are forged from crucible steel, have bits 2 inches wide, are hickory handled and furnished in both full polished and half polished styles. The driving surfaces of the polls of the lathing hatchets are all scored both ways.

Arrow Ash and Garbage Can.

The Arrow Can Company, 35 Warren street, New York, has just put on the market the Arrow ash and garbage can here shown. The body is made of one piece of heavy gauge sheet steel with ten flutes, inside of which are ½-inch iron rods extending the length of the can and which hold the one piece top and bottom sections rigidly in position. The top rim is formed of one solid piece of extra heavy sheet steel, 16 gauge, with double flanges which crimp over the edge of body, thus giving protection and affording a smooth edge for handling. The bottom, also of one piece of the same stock, is convex to resist end blows, fitting the body snugly, the metal of which is tightly crimped between the two flanges, making a tight joint. The rods are shouldered on inner sides of both top and bottom to give solid support, which when the outer rod ends are riveted down make a solid and substantial lock. The sheet steel parts are all formed by special dies and machinery in a natural state, the finished can then being galvanized entire, thereby soldering all joints, which not only greatly strengthens the can but makes it liquid tight. In the rough handling an ash can is subject to two flutes will rest on the side of an ash cart when it is being emptied and protect the body. The stout handles for carrying rise only to a right angle position with the side of can. The covers are made convex so that a can may be heaped full, if necessary, the cover flange being made to wedge sufficiently so that it cannot be readily knocked off or nosed by animals. For the present a standard size will be made, 17 x 24 inches, other sizes following later. This method of construction produces a can both strong and sightly. All cans have the company's arrow trademark pressed into the sheet metal and cast in the handles.

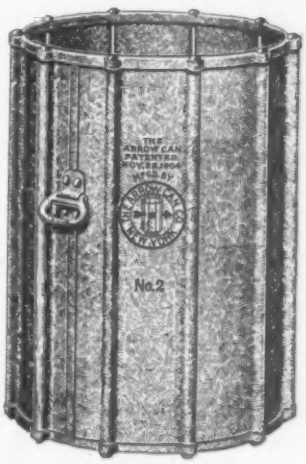


Fig. 1.—Pressed Steel Ash and Garbage Can.

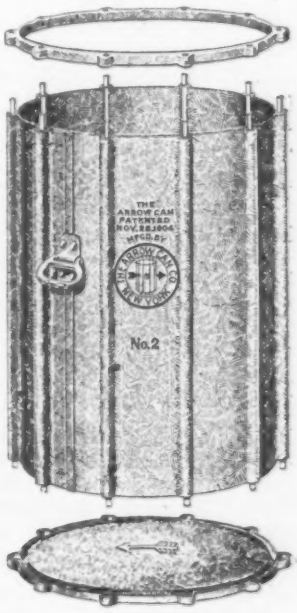


Fig. 2.—Method of Construction.

Ohio Mop Head and Detachable Handle.

Eagle Cooperage Works, Circleville, Ohio, is offering the mop head and detachable handle shown herewith. The device is simple in construction, the cotton being clamped with a positive grip by wire which, it is explained, will neither break nor rust, making it impossible for the cotton to pull off on the floor or in a wringing pail when in use. The mop is attached to handle by bolt and nut adjustment, which, it is remarked, cannot

work loose, yet is quickly and easily released when desired. The device is constructed of only two parts, which, it is stated, cannot get out of order. It is pointed out that the operator gets the use of every ounce of cotton, as

Ohio Mop Head and Detachable Handle.

none is bound to the handle which cannot be used. The castings are of malleable iron.

Bullets with Hard or Soft Points and Gas Checks.

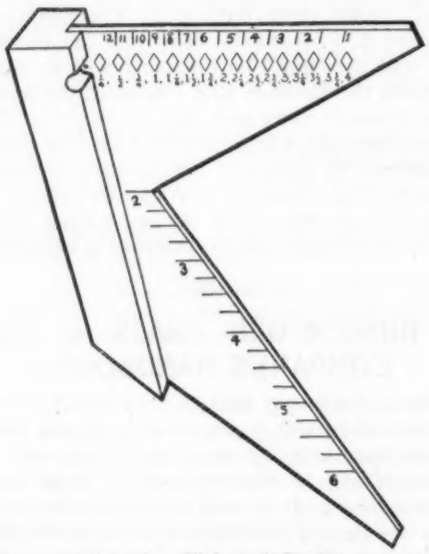
Ideal Mfg. Company, New Haven, Conn., whose bullet with metal gas check for 30-40 Krag rifle was illustrated in these columns October 12 last, has put on the market

Bullets with Hard or Soft Points and Gas Checks.

molds, tools and gas checks, as shown in the accompanying cuts, for some of the sporting rifles. The bullets can be made with hard or soft point, for which two molds will be required, one for the complete bullet and one for the soft tip. The body of the bullet should be cast from hard alloy and the tip from pure lead. A test is reported as showing, after shooting 50 rounds, that the accuracy was good, that the rifle barrel cleaned easily, showing no trace of leading, and that the temperature of the barrel rose only about one-half as compared with the use of the regular high power ammunition. It is claimed for this ammunition that it can be made much cheaper than the price of the factory product, that the individual can use old shells over and over again until they are worn out and that it is a great saving on the wear of the rifle barrel.

The New Universal Square.

The Duby & Shinn Mfg. Company, 19 Park place, New York, has improved its square by combining the two lines of diamond holes into one line, as shown herewith. This corrects a slight discrepancy in the measurement of the circle which was found in the company's old style square. The arrangement of the diamond holes is now more convenient for using the square as a gauge for marking a straight line every ⅛ or ¼ inch. This is done by placing a pencil in the corner of one of the holes and sliding the square along the edge of the board. Soon after the manufacture of the square was commenced the company found that its facilities for turning out goods to satisfy the demand were inadequate. Accordingly new factory quarters were secured, and the company states that it is now in a position to accept stock orders with a guarantee that shipments will be made within two weeks or less.



The New Universal Square.

Tempered Hook Rules.

Brown & Sharpe Mfg. Company, Providence, R. I., is offering tempered hook rules, as shown in the accompanying cuts. The narrow rule illustrated in Fig. 2 is of the same construction as that in Fig. 1, differing only in that it is narrow enough to allow measurements to be taken through a hole ⅜ inch in diameter. The rules are designed for measuring diameters of flanges or circular pieces, through the hubs of pulleys, setting calipers and dividers and work of a similar character. The hook is held rigidly in position by a clamp that is closed by the simple tightening of the knurled nut shown at the left. This construction requires no hole for attaching the hook and allows it to be clamped in any position on the rule, or it can be used as a slide in measuring against a shoulder or the depth of a hole. The hooks of the rules are carefully hardened. The wide rule is made 4, 6, 9, 12, 18, 24 and 36 inch lengths, while the narrow rule is made only in the first four lengths.

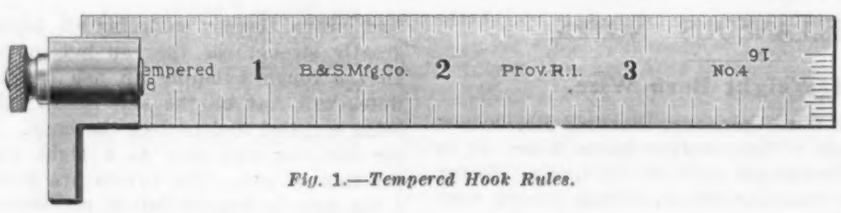


Fig. 1.—Tempered Hook Rules.

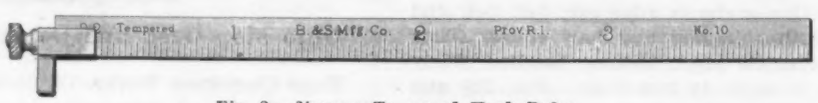


Fig. 2.—Narrow Tempered Hook Rules.

Stropping Machine and Folding Brush.

Kampfe Bros., 8-12 Reade street, New York, manufacturers of the Star safety razor, have just put on the market the improved Kampfe safety razor stropping machine and folding shaving brush, here illustrated, both nearly half size. Fig. 1 reproduces the stropping machine, a marked feature of which is the heel and toe movement automatically imparted in moving the stropping machine (in the holder of which a safety razor blade is held) back and forth on a swing strop. This is accomplished by having the hard rubber friction rolls on either side fixed at a greater than right angle with the edge of razor, the alignment of the infinitesimal steel particles in edge of blade from heel to point being a decided advantage in the operation of shaving. The handle is of polished and nickeled wire. Fig. 2 illustrates the Kampfe folding shaving brush. The object of this construction is to improve the sanitary condition and save space. After the brush has been used and thoroughly freed of hair and lather by rinsing it can be hung up readily so that the drip is off and away from the brush, instead of toward the butt or socket. The brush proper is made of badger hair, the butts of which are passed through the metallic socket and cemented, when a rear metal cap is forced into place as a backing or foundation, the last operation being the crimping inward of the front part of socket so as to grip securely the entire mass. The twisted handle is polished and nickeled, making a hygienic brush, which is put up singly in a neat black water proof box, for sale profitably at a moderate price.

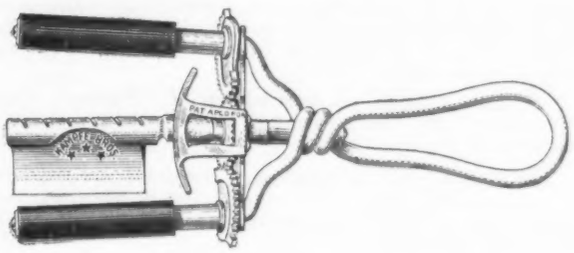


Fig. 1.—Kampfe Improved Safety Razor Stropper.

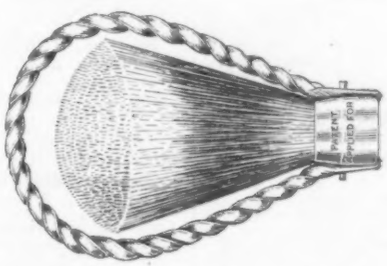
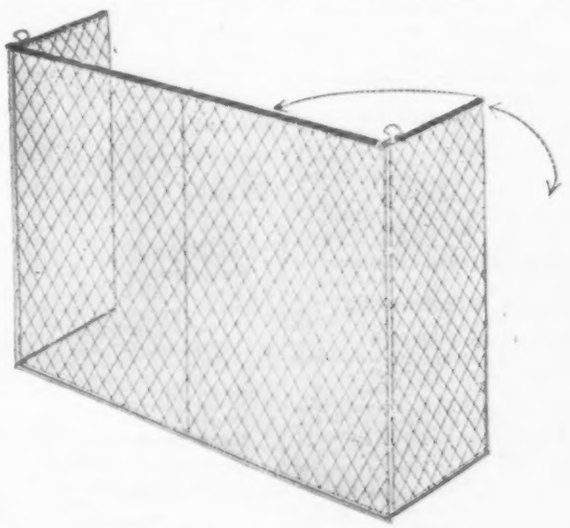


Fig. 2.—Kampfe Folding Lather Brush.

The Royal Adjustable Folding Fenders.

Fred. J. Meyers Mfg. Company, Hamilton, Ohio, is introducing adjustable folding fenders, one of which is shown herewith. When folded for shipping or storage they occupy less than half the space of the ordinary style of fenders. The adjustability permits setting the fenders so as to fit any ordinary fire place, obviating the necessity of carrying assorted sizes in stock. The fenders are referred to as standing firmly when set. They are made in different styles of finish, from 12 to 30 inches high, but all 13 inches deep, with 34-inch fronts.



The Royal Adjustable Folding Fenders.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	38 @39
Linseed, City, Boiled	39 @40
Linseed, State and West'n, raw	36 @37
Linseed, raw Calcutta seed	@62
Lard, Extra Prime, Winter	64 @65
Lard, Extra No. 1	49 @52
Lard, No. 1	38 @40
Cotton-seed, Crude, f.o.b. mills	23½@25
Cotton-seed, Summer Yellow, Prime	29½@29¾
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	50 @62
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	60 @62
Sperm, Bleached Winter	63 @65
Tallow, Prime	51 @53
Whale, Crude	@..
Whale, Natural Winter	42 @44
Whale, Bleached Winter	44 @46
Menhaden, Brown, Strained	23 @28
Menhaden, Light, Strained	24 @29
Menhaden, Bleached, Winter	30 @31
Menhaden, Ex.-Bld., Winter	31 @32
Menhaden, Southern	16 @16½
Cocoanut, Ceylon	℔ lb 6½@ 6¾
Cocoanut, Cochin	℔ lb 8 @ 8¼
Cod, Domestic, Prime	34 @35
Cod, Newfoundland	38½@40
Red, Elaine	30 @31
Red, Saponified	℔ lb 4¼@ 4¾
Olive, Italian, bbls	60 @67
Neatsfoot, prime	49 @50
Palm, Logos	℔ lb 6 @ 6¼

Mineral Oils—

Black, 29 gravity, 25@30 cold test	℔ gal. 10½@11½
Black, 29 gravity, 15 cold test	11½@12½
Black, Summer	10½@11¼
Cylinder, light filtered	15 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	12½@13
Paraffine, 903 gravity	11½@12
Paraffine, 883 gravity	9¼@ 9½
Paraffine, Red	11½@13

In small lots ⅛¢ advance.

Miscellaneous—

Barytes:	
White, Foreign	℔ ton $17.50@19.00
Amer. floated	℔ ton 18.00@19.00
Off color, No. 2	℔ ton 13.50@15.00
Chalk, in bulk	℔ ton 3.00@ 3.25
Chalk, in bbls	℔ 100 lb ...@ .35
China Clay, English	℔ ton 11.00@17.00
Cobalt, Oxide	℔ 100 lb 2.50@ 2.60
Whiting, Common	℔ 100 lb .43@ .48
Whiting, Gilders	℔ 100 lb .50@ .55
Whiting, Ex. Gilders	℔ 100 lb .55@ .60

Putty, Commercial—℔ 100 lb

In bladders	$1.65 @1.85
In bbls. or tubs	1.15 @1.35
In 1 lb to 5 lb cans	2.60 @2.90
In 12½ to 50 lb cans	1.45 @1.85

Spirits Turpentine—℔ gal.

In Oil bbls	64½@65
In machine bbls	65 @65½

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	38 @39
Bone Dried	43 @49
Button	40 @45
Diamond I	@55
Fine Orange	45 @47
A. C. Garnet	@45
D. C	60 @..
Octagon B	@32
T. N	42 @43
V. S. O	53 @..

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	8¼@ 9½
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 7
Lots less than 500 lb	@ 7½
In Barrels	@ 6½
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ⅛
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½

Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Lead, White, Dry, in bbls	@ 6½
Zinc, American, dry	4⅞@ 5
Zinc, French:	
Paris, Red Seal, dry	9½
Paris, Green Seal, dry	10⅜
Antwerp, Red Seal, dry	8⅝
Antwerp, Green Seal, dry	10
Zinc, V. M. French, in Poppy Oil: Green Seal:	
Lots of 1 ton and over	12⅞@13⅜
Lots of less than 1 ton	13¼@13⅝
Zinc, V. M. French, in Poppy Oil: Red Seal:	
Lots of 1 ton and over	11⅝@12⅛
Lots of less than 1 ton	11⅞@12⅜

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black, Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.50@3.60
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	@ 7
Lots less than 500 lb	@ 7½
Litharge, American, bbls	@ 7
Ocher, American	℔ ton $8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¼@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12¼
Orange, Mineral, German	8½@10
Orange, Mineral, American	8¼@ 8½
Red, Indian, English	4¼@ 8½
Red, Indian, American	3 @ 3¾
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	℔ lb 3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French	℔ ton $15.00@30.00
Talc, American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
Terra Alba, English	℔ 100 lb 90 @1.00
Terra Alba, American, ℔ 100 lb, No. 1	70 @80
Terra Alba, American, ℔ 100 lb, No. 2	60 @65
Umber, Turkey, Brt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1½@ 2
Umber, Raw, Amer	1½@ 2
Yellow Chrome	11 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@66
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—
Peter Wright & Sons.....℔ lb 10½ ¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....75@75&5%
Jennings' Patn., reg. finish.... 50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&2½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&2&2½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $36; No. 2, $18.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames .....2&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ship Augers.....45&5&60%
Ford's .....33⅓@5%
G. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights:
First Quality.....$6.75
Second Quality.....$6.25
Double Bit, base weights:
First Quality.....$9.00
Second Quality.....$8.50

Axle Grease— See *Grease, Axle*

Axles— Iron or Steel
Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@—
No. 2 Solid Collar.....4@4½
Half Patent:
Nos. 7, 8, 11 and 12...75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 3@3¼¢

Towel -
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.).℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Hand—
Inch..	*6*	*7*	*8*	*9*	*10*
Doz..	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*

Molders— *Net Prices.*
Inch..	*9*	*10*	*11*	*12*	*14*
Doz..	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*

Bells— Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's...60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.. 60&10@60&10&5%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 70%
Light Standard.....70&5%
Cut Leather Lacing.....50&5%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard:...70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops— See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&10@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—
Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle $3.00 list May 24, '99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅝ x 4 and smaller 75@—%
Machine, larger and longer.. 65&10@—%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:
Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—
Plow .....65&10&10@70%
Stove .....87½&10@—

Tire—
Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...$4.80	*5.60*	*6.40*	*8.00*	
Inch	*2¼*	*2½*		
Per doz.....	*$8.65*	*11.50*		

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball Bearing, American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 214 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods— See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.
Quart.....	*10*	*12*	*14*
Water, Regular...	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts— Brass—
Wrought, list, Sept., '99..15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5
Parliament Butts.....70@70&5

Wrought Steel—
Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts... 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10%

Cages, Bird—
Hendryx, Brass:
2000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....60&10%

Ex. 10&10&10@10&10&10&5%

Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb.4¢@4¼¢
Sharp, 1 prong...per lb., 4½@4¾¢
Burke's Blunt.....4¢@4¼¢
Burke's Sharp.....4½@4¾¢
Gautier, Blunt.....4¢@4¼¢
Gautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....₩ lb 3.65¢
Perkins', Sharp Toe.....₩ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:

5-16	¼	5-16	⅝	7-16	½	9-16
$8.60	5.80	4.85	4.10	3.95	3.85	3.80
¾	⅞	⅞ to 1	1⅛ to 1¼ inch.			
$3.75	3.60	3.55	3.70			

German Coil.....60&10&10@70%

Halter—

Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Covert Mfg. Co, Halter.....35&5%
Covert's Saddlery Works Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring.$24.50
6½—6-2, Str'ght, with ring.$25.50
6½—8-2, Str'ght, with ring.$29.50
6½—10-2, Str'ght, with ring.$34.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60&10%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10&5@70%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.:
Breast.....35&5%
Heel.....35&5%
Rein.....35&5%
Stallion.....35&5%
Covert Sad. Works:
Breast.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Dog Leads and Kennel Chains. 40&40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl. Jointed Chain.....50%

Chain and Ribbon, Sash—

Oneida Community:
Copper Chain.....60&5%
Steel Chain.....60%
Pullman:
Bronze Chain.....60%
Steel Chain.....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set.8¢

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 38@40¢
Carpenters' Red.....gro. 33@33¢
Carpenters' White....gro. 28@30¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Eclipse.....60&10%
Pullman, per gro.....$54.00
Russwin.....40%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—Socket Framing and Firmer

Standard List.....75@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—

Tanged Firmers.....$3 1-3@40%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—

Cold Chisels, good quality..13@15¢
Cold Chisels, fair quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—

Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat., all sizes.35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....40&10@50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.
Wood Workers, Hammers'.....40&10%

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..₩ doz. $4.05 net
Star Shank, All Steel..₩ doz. $3.24 net
W. & C. Shank, All Steel, ₩ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓&33⅓&10%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00...20%
Lightning Belt.....$15.00 } 15%
Chicago Belt.....$20.00 }
Stewart's Patent Sheep, $12.75....20%

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....75@75&5%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

Conductor Pipe,—

L. C. L. to Dealers:
Galvanized.

Territory.	*Nested.*	*Not nested.*
Eastern	*.....70&15%*	*70&10%*
Central	*....70&7½%*	*70&2½%*
Southern	*...70&8½%*	*60&20%*
So. Western	*..60&20%*	*60&10%*
Copper.		*1¼&16 oz.*
Eastern	*.....*	*50&10%*
Central	*.....*	*50&7½%*
Southern	*.....*	*50&5%*
So. Western	*.....*	*50&2½%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador ...	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.....	3	4	6	8	
Iceland, ea..	$1.80	$2.10	$2.40	$3.00	
Gal.....	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$4.15

White Enameled.....25%
Agate Lined.....25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair and heavier, 23@24½¢; lighter than 3 lbs. to pair.....25@26¢

Cord—Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 25½¢; No. 6, 25½¢.
Cable Laid Italian..... lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted.17@19¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: ₩ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.96; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ₩ lb., 24½¢; No. 7, 23½¢; Nos. 8 to 12, 23¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....₩ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Pullman:
Wire Sash Cord.....19%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....₩ lb 40 ¢
Braided, Italian Hamp.....₩ lb 40 ¢
Braided, Linen.....₩ lb 55 ¢
Braided, White Cotton or Spot.....₩ lb 35 ¢
Massachusetts, White.....₩ lb 30 ¢
Massachusetts, Drab.....₩ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½ ¢
See also Chain and Ribbon.

Wire, Picture—

List Oct., '00.....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—

Grain.....40&12½%

Crayons—

White Round Crayons, gr..6@6½¢
Cases, 100 gro., $5.00 at factory.
D. M. Steward Mfg. Co.: (Case lots, 20%)
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Zelnicker's Lumber:
Red, Blue, Green.....₩ gro. $6.50
Black.....₩ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....₩ doz. $7.00
Fort Madison, Light.....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847.₩ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₩ doz. $3.00
Wm. Rogers & Son.....₩ doz. $2.50

Cutters—Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$1.50	$6

Dixon's.....₩ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....₩ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ₩ doz. $24.00..40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....₩ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₩ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₩ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₩ gr. $18@$20
Slaw Cutters, 2 Knife..₩ gr. $22@$30

Tobacco—

All Iron, Cheap..doz. $4.25@$4.50
Enterprise.....25@30%
National, ₩ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ₩ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—

Appleton's, ₩ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....₩ doz. $6.25
Iwan's Perfection Post Hole Digger..₩ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....₩ doz. $7.25
Kohler's Universal.....₩ doz. $14.00
Kohler's Little Giant.....₩ doz. $12.00
Kohler's Hercules.....₩ doz. $10.00
Kohler's Invincible.....₩ doz. $9.00
Kohler's Rival.....₩ doz. $8.00
Kohler's Pioneer.....₩ doz. $7.00
Never-Break Post Hole Diggers, ₩ doz., $24.00.....60%
Samson, ₩ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, 7/8 in....₩ doz. $10.00
Phillips', style 077, 7/8 in....₩ doz. $7.50
Phillips', style x-y, 7/8 in....₩ doz. $10.50

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₩ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ₩ doz., 2½-in., $6; 4-in., $7.50; 6-in. $9.....50%
Buck Bros.' Screw Driver Bits.....50%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50, 53 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65%
No. 86.....75%
Victor.....55%
Defiance.....70%
Swan's:
Nos. 7565 to 7568.....50%
No. 7540.....40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L.*
Eastern	*.....80&5%*
Central	*.....75&10&10%*
Southern	*.....75&12½%*
So. Western	*.....75&5%*

Terms,—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. C. Iron and Steel, Standard Gauge.....60&10%
No. 26.....35%
No. 24.....25%
No. 22.....10%
Copper.....37½%

Elbows, Stove Pipe—

Dover, one piece.....40%
Perfect Elbows (S., S. & Co.).....40%

Emery, Turkish—

	4 to 46	*5 to 220*	*Flour.*
Kegs	*.....lb. 5 ¢*	*5½¢*	*5½¢*
½ Kegs	*.....lb. 5¼¢*	*5¾¢*	*5¾¢*
¼ Kegs	*.....lb. 5½¢*	*6 ¢*	*4 ¢*
10-lb. cans, 10 in case....	*6½¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*
Less quantity..	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Watling's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined..
60&10@70%
Red Cedar.....40&10@50%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined..
50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.25*	*3.75*	*4.25*	*4.75*

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sa...cut's 70%
Stowell's Giant Grindstone Hanger..
℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures, Light. 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....66⅔%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.30*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp .....$2.75 } 2½% off
Cotton .....3.20 }
Waterproof Sgl. Taped..3.65 }
Waterproof Dbl. Taped..4.40 }
Waterproof Tpl. Taped..5.15 }

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush..
25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓%
Pike Mower and Tool Grinder, each .....$6.00 }
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.00

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web .....35&5%
Jute Rope.....50%
Sisal Rope.....30&10%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties 60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail.....
33⅓&7½@33⅓&10&7½%
Engineers' and R. S. Hand.....
50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners' .....
40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb..50¢..80¢5@—%
3 to 5 lb., per lb., 40¢..80¢5@—%
Over 5 lb., per lb., 30¢, 80&10¢5@—%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion .....45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted .....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted .....$2.15@$2.40
Apple Socket Firmer, gro. assorted .....$1.75@$1.95
Hickory Socket Firmer, gro. assorted .....$1.45@$1.60
Hickory Socket Framing, gro. assorted .....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 80¢; Jack, Bolted 75¢
Fore, doz. 45¢; Fore, Bolted 90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.....
℔ gro. $0.85@$1.50

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.
Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Brcs. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance .....60&10%
Cleveland 75%
Clipper, No. 75.....60%
Crown .....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant .....60&5%
Hummer .....70&5%
New York.....60&10%
Peerless 75%
Sterling .....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10.50&10%
Roller B'r'g St'l Track No. 12.$2.15
Roller B'r'g St'l Track No. 13.$2.30
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&10%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 29.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings Nos. 30, 41, 43 .....75%
Anti-friction No. 52.....60&20%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Safety Door Ranger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator 40%
Express 50%
Freight Car Door.....60%
Interstate .....60&10%
Lundy Parlor Door.....50&10%
Magic 60%
Matchless .....60&10%
Nansen .....70&5%
Parlor Door.....50&10%
Railroad .....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....10%
Wild West Warehouse Door..50%
Zenith Fur Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle 70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot 60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing..℔ doz. $5.00
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet 50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Extra 5&10% often given.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled.. $27.00
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....70&10%

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.50

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5.....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....75&10&5%
Buffalo Gravity Locking Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L'tchs.	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:
With Latch.....doz. ...@$2.00
Without Latch...doz. ...@$1.60
Reversible Self-Closing:
With Latch.....doz. ...@$1.75
Without Latch...doz. ...@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz. $1.15
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges.....40%
No. 990 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co. Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge .....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list December 20, 1904:
Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap..75&5%
Cor. Ex. Heavy T.70&10%
Extra 10@10&5%
Screw Hook and Strap. 6 to 12 in..lb.3¾¢; 14 to 20 in..lb.3½¢; 22 to 36 in..lb.3¼¢
Screw Hook and Eye:
¾ to 1 inch.....lb.6½¢
⅝-inch.....lb.7½¢
½-inch.....lb.8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—
Per doz.

Inch	*15*	*16*	*17*	*18*
Galv. Open	*$2.50*	*2.75*	*3.00*	*3.25*
Jap. Open	*$1.90*	*2.10*	*2.25*	*2.55*
Galv. Funnel	*$3.00*	*3.30*	*3.60*	*3.90*
Jap. Funnel	*$2.45*	*2.65*	*2.85*	*3.30*

Masons' Etc.—
Avery-Caldwell Mfg. Co.:
Steel Brick.....each $1.00
Steel Mortar.....each $1.25
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—
Scovil and Oval Pattern.....60&10@60&10&10%
Grub, list Feb. 23, 1899.....70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'ting Shuffle Hoe,℔doz.$4.85

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00.....45&10%

Door—
Bardsley's.....45%
Empire.....50%
Pullman.....50%

File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—
Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....60%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—
Belt.....80&10@..%
Wire C. & H. Hooks:.....75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—
Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.60
Grass, common grades, all sizes, per doz.....$1.30
Whiffletree.....lb. 5¾@6¢
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 5 @ 6 ¢
3-ply Guaranteed..ft. 8 @ 9 ¢
4-ply Guaranteed..ft. 10 @11 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8 @ 9 ¢
Fair Quality.....ft. 10 @11 ¢

Irons— Sad—
From 4 to 10.....lb.3 @3½¢
B. B. Sad Irons.....lb. 3¼@3½¢
Chinese Laundry....lb. 4¾@5 ¢
Chinese Sad.....lb. 4 @4¼¢
Mrs. Potts', cenis per set:

Nos.	*50*	*55*	*60*	*65*
Jap'd Tops	*68*	*65*	*78*	*75*
Tin'd Tops	*71*	*68*	*81*	*78*

New England Pressing..lb. 3¾@4¢

Pinking—
Pinking Irons.....doz.60¢

Irons, Soldering
See *Coppers.*

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%

Corn—
Withington Acme, ℔ doz., $2.65;
Dent, $2.75; Adj. Serrated, $2.20;
Serrated, $2.10; Yankee No. 1, $1.50;
Yankee No. 2, $1.15.

Drawing—
Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—
Serrated Edge, per doz.$5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—
Buffalo.....℔ gro. $13.00

Miscellaneous—
Farriers'.....doz. $3.00@3.25
Wostenholm's.....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch, or Maple, Rubber Tip.....gro.$1.25@$1.50
Carriage, Jap., all sizes.....gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See *Belting, Leather—*

Ladders, Store, &c.—
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—
Regular Tubular, No. 0.....doz.$4.25@4.50
Lift Tubular, No. 0.....doz.$4.75@5.00
Hinge Tubular, No. 0.....doz.$4.75@5.00
Other Styles.....40@40&5%

Bull's Eye Police—
No. 1, 2¾-inch.....$2.75@3.00
No. 2, 3-inch.....$3.00@3.25

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—
Roggin's Latches, with screw..doz.35@40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—
Small.....doz. 50¢; large, 60¢
Covert Mfg. Co., Cotton and Hemp.45%

Lifters, Transom—
R. & E.....33⅓%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.25*	*2.00*	*1.75*
75 feet	*$1.75*	*1.55*	*1.10*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ℔ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.

Locks— Cabinet—
Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—
Stowell's.....8%

Padlocks—
Wrought Iron....75&10&5@80&5%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—
Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—
Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—
Reisinger Invincible Hand Power.....℔ doz. $18.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.: Per doz.
Boss No. 1.....$57.00
Boss Rotary.....$54.00
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$26.00
Cintl Square Western.....$30.00
Uneeda American, Round.....$30.00

Mallets—
Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Apple-wood.....doz. 45&5@50%

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato....60&10%

Mats, Door—
Elastic Steel (W. G. Co.), new list..50&10%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest.....all sizes, $1.85@2.00
Cheap.....all sizes, $2.00@2.50
Better Grade..all sizes, $2.50@4.50

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr. Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

Nails—
Wire Nails and Brads, Papered. List July 20, 1899..85&5@85&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	....33⅓%
New Putnam	19	18	17	16	16	..10&10%

Western.....℔ lb 8½¢
Jobbers' Special Brands.....per lb.9@10¢

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass H'd.	*45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head..	*1.10*	*1.10*	*1.10*		*.. gro*

Nippers—
See *Pliers and Nippers.*

Nuts—
Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, Blank or Tapped..$5.00
Hexagon, Blank or Tapped.$5.45
Square, Blank, C. T.....$5.30
Hexagon, Blank, C. T.....$6.05
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.20
Square, Tapped.....$5.20
Hexagon, Tapped.....$5.70

Oakum—
Best.....lb.6¼@6½¢
U. S. Navy.....lb.5¾@6¢
Navy.....lb.4½@5¢
Plumbers' Spun Oakum..3½@3¢
In carload lots ½¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—
Brass and Copper.....50&10%
Tin or Steel.....65&10@70%
Zinc.....65&10@70%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can—
Per doz.
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—
Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—
Asbestos Packing, Wick and Rope.....lb. 14@16¢

Rubber—
(Fair quality goods.)
Sheet, C. I.....80@10¢
Sheet, C. O. S.....90@13¢
Sheet, C. B. S.....100@1½¢
Sheet, Pure Gum.....50@65¢
Sheet, Red.....40@50¢
Jenkins' '96. ℔ lb 80¢.....25@25&5%

Miscellaneous—
American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute.....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—
S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—
See *Buckets.*

Pans— Dripping—
Standard List.60&10@60&10&12½%

Fry—
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—
Regal, S., S. & Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper
Asbestos: lb.
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.6¢
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.....8¢
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.....10¢
1-32 to ½ in.
Per roll
Rosin Sized Sheathing; 500 sq. ft.
Light weight, 25 lbs. to roll.....35@40¢
Medium weight, 30 lbs. to roll.....40@45¢
Heavy weight, 40 lbs. to roll..56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$45.00@50.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—
1 ply (roll 300 sq. ft.), ton.....$32.50@35.50
2 ply, roll 108 sq. ft.....55@60¢
3 ply, roll 108 sq. ft.....75@85¢

Slater's Felt (roll 500 sq. ft.) .75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.) $2.75

Sand and Emery—

Flint Paper and Cloth .60@60&10%
Garnet Paper and Cloth ... 25%
Emery Paper and Cl'h .60@60&10%

Parers— Apple—

Advance ..... ℔ doz. $4.00
Baldwin ..... ℔ doz. $4.00
Bonanza Improved ..... each $6.50
Daisy ..... ℔ doz. $4.00
Dandy ..... each $7.50
Eureka Improved ..... each $20.00
Family Bay State ..... ℔ doz. $15.00
Improved Bay State ..... ℔ doz. $36.00
Little Star ..... ℔ doz. $5.00
New Lightning ..... ℔ doz. $7.00
Reading 72 ..... ℔ doz. $3.25
Reading 78 ..... ℔ doz. $6.25
Rocking Table ..... ℔ doz. $6.20
Turn Table '98 ..... ℔ doz. $6.00
White Mountain ..... ℔ doz. $5.00

Potato—

Saratoga ..... ℔ doz. $7.00
White Mountain ..... ℔ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899 ..... 75%
Cronk's Handled Garden Mattock, ℔ doz., $6.40 ..... 33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass ..... 60@60&10%
Iron, list Nov. 11, '85 .. 60@60&10%

Pipe, Cast Iron Soil—

Carload lots.

Standard, 2-6 in. 60%
Extra Heavy, 2-6 in. 70%
Fittings 75%

Pipe, Merchant—

Consumers, Carloads.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
¼ & ⅜ in..	71%	55%	68½%	52½%
½ & ⅝ in..	75%	63%	72½%	60½%
¾ to 6 in..	79%	69%	77 %	67 %
7 to 12 in..	74%	59%	72 %	56½%

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 2 to 2½ in.:

New England 68%
New York and New Jersey .. 71%
Maryland, Delaware, E. Pa. 75%
West. Pa. and West Va 77%
Virginia 76%
Ohio, Michigan and Ky. 77%
Indiana 77%

NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—
Wood Planes—

Bench, first qual. ..... 40&10%
Bench, Second qual. ..... 50&10%
Molding ..... 33⅓&10%
Bailey's (Stanley R. & L. Co.) 40%
Chapin-Stephens Co.:
Bench, First Quality ..... 40@40&10%
Bench, Second Quality .... 50@50&10%
Molding ..... 33⅓@33⅓&10%
Toy and German ..... 40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality ..... 40@40&10%
Bench, Second Quality .... 50@50&10%
Molding ..... 33⅓@33⅓&10%
Adjustable Wood Bottom 60%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co.) 40%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) 35%
Ohio Tool Co.'s Iron Planes 40%
Sargent's ..... 60&10%
Union 60%

Plane Irons—

Wood Bench Plane Irons ..... 25&10@30%
Buck Bros. 30%
Chapin-Stephens Co. ..... 30@30&10%
Ohio Tool Co. 30%
Stanley R. & L. Co. 35%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse ..... ℔ doz. $8.50

Plates—

Felloe ..... lb. 3¾@4¼¢
Self-Sealing Pie Plates (S., S. & Co.), ℔ doz. $2.00 ..... 50%

Pliers and Nippers—

Button Pliers ... 75&10@75, 10, 5%
Gas Burner, per doz.. 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$2.00	$2.25	$3.00	$3.75

Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button ..... 75&10%
Cronk's 60%
Stub's Pattern 50%
Combination and others 33⅓%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers 50%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10&10%
Chapin's Imp. Brass Cor. 40@40&10&10%
Pocket Levels ..... 30@30&10&10%
Disston's Plumbs and Levels 70%
Disston's Pocket Levels 10%
C. E. Jennings & Co.'s Iron 33⅓%
C. E. Jennings & Co.'s Iron, Adjustable ..... 40&7½%
Stanley R. & L. Co. 45%
Stanley's Duplex 35%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00 ..... 50%

Points, Glaziers'—

Bulk and 1-lb. papers, lb. 8½@9 ¢
½-lb. papers ..... *lb.* 9 @9½¢
¼-lb. papers ..... *lb.* 9¾@10¼¢

Pokes, Animal—

Ft. Madison Hawkeye ..... ℔ doz. $3.25
Ft. Madison Western ..... ℔ doz. $4.00

Police Goods—

Manufacturers' Lists ... 25@25&5%
Tower's 25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ℔ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ℔ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72.... 10%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro., $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can.... each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon's, ℔ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ℔ lb 8¢
Fireside ..... ℔ gr. $2.50
Gem, ℔ gr. $4.50 ..... 10%
Japanese ..... ℔ gr. $3.50
Jet Black ..... ℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail ..... each 70¢
Black Silk, ½ lb box ..... ℔ doz. $1.00
Black Silk, 5 oz. box ..... ℔ doz. $0.75
Black Silk, ½ pt. liq. ..... ℔ doz. $1.00

Poppers, Corn—

1 qt., Square ..... *gro.* $9.00
1 qt., Round ..... *gro.* $10.00
1½ qt., Square ..... *gro.* $11.00
2 qt., Square ..... *gro.* $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts ..... each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned 35%

Powder—

In Canisters:
Duck, 1 lb ..... *each* 45¢
Fine Sporting, 1 lb .... *each* 75¢
Rifle, ½-lb ..... *each* 15¢
Rifle, 1-lb ..... *each* 25¢
In Kegs:
12½-lb. kegs $3.50
25-lb. kegs $4.50
King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun.. 50&20%

Presses—
Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Seal Presses—

Morrill's No. 1, ℔ doz., $20.00 ..... 50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller $21.00

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ℔ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
Pelican, ℔ doz. $9.00 ..... 40&10%
Scranton, Case Lots:
No. 2R (large) $5.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots ..... ℔ doz. $6.00
Diamond B, No. 3, case lots ..... ℔ doz. $5.50
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15 ..... 33⅓%
Staple Pullers 60%
Parrot Tack and Stub Puller, ℔ doz., 75c.; ℔ gro., $6.00

Pulleys, Single Wheel—

Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.	$0.30	.45	.60	1.05

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	*2*	*2¼*	*2½*
Hot House, doz.	$0.65	.85	1.20
Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz.	$0.16	.19	.23	.30
Inch	*1¾*	*2*	*2½*	*2½*
Side, doz.	$0.25	.40	.55	.60
Inch	*1½*	*1¾*	*2*	*2½*

Stowell's:
Ceiling or End, Anti-Friction.. 60&10%
Dumb Waiter, Anti-Friction.. 60&10%
Electric Light 60%
Side, Anti-Friction ..... 60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in. ..... 16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in.. 16@19¢
Acme ..... 1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ℔ doz. 50%
Grand Rapids All Steel Noiseless.. 50%
Ideal ..... 70&10%
Niagara ..... 1¾ in., 16¢; 2 in., 19¢
No. 26, Troy.. 1¾ in., 14½¢; 2 in., 16½¢
Star ..... 1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern ..... 60@60&10%
Pitcher Spout ..... 80@80&10%
Wood Pumps, Tubing, &c. 45@50%
Barnes Dbl. Acting (low list) 50%
Barnes' Pitcher Spout ..... 75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co. $16.00
Daisy Spray Pump ..... ℔ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list) 55%
Flint & Walling's Fast Mail (low list) ..... 55&5%
Flint & Walling's Tight Top Pitcher. 80%
National Specialty Mfg. Co., Measuring, $6.00 ..... 30%
Mechanical Sprayer $6.00
Myers' Pumps (low list) 50%
Myers' Power Pumps 50%
Myers' Spray Pumps ..... 50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	2.50	2.75	3.00
Inch...	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	3.60	3.85	4.10	4.40

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	3.85	5.00	6.00

Punches—

Saddlers' or Drive, good ..... *doz.* 50@75¢
Spring, single tube, good quality ..... $1.75@2.00
Revolving (4 tubes) ..... *doz.* $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive. 50%
Bemis & Call Co.'s Check 55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches ..... 55&10%
Steel Screw, B. & K. Mfg. Co. 50%
Tinners' Hollow, P., S. & W. Co... 40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44 ..... 60%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron .... 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢ 30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ℔ ft. 5½¢
No. 2, Reliable Hgr. Track, ℔ ft. 7¢
Cronk's:
Double Braced Steel Rail.. ℔ ft. 2¾¢
O. N. T. Rail ..... 2½¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., $3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T. ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in. ..... ℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢.. 50%
None Better ..... ℔ ft. 3¾¢
Standard ..... ℔ ft. 4 ¢
Myers' Stayon Track ..... 60&10%
Richards' Mfg. Co.:
Common 1 x 3-6 in., $2.25; 1¼ x 3-16, $2.50; 1¼ x 3-16, $2.75.
Special Hinged Hanger Rail.. 60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
Safety Door Hanger Co.'s Storm King Safety 60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail ..... ℔ ft. 1¾¢
Steel Rail, Plain 25%
Wrought Bracket, 1 3-16 in.... ℔ ft. 3¢
Wrought Bracket, 1½ x 5-16.. ℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢ 60%
P. L. B. Steel Rail ..... ℔ 100 ft. $3.00
No. 0, 1 x 3-16 ..... ℔ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Fort Madison Red Head Lawn.... $3.25
Fort Madison Blue Head Lawn.... $2.70
Jackson Lawn, 20 and 30 teeth, ℔ doz., net $4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.. 75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..... 80%
Queen City Lawn, ℔ doz., 20 teeth, $3.45; 24, $3.60 ..... net.
Anticlog Lawn, ℔ doz. $4.00
Malleable Garden ..... 70&10%
Kohler's:
Lawn Queen, 20-tooth..... ℔ doz. $3.45
Lawn Queen, 24-tooth..... ℔ doz. $3.60
Paragon, 20-tooth..... ℔ doz. $2.75
Paragon, 24-tooth..... ℔ doz. $3.00
Steel Garden, 14-tooth.... ℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00
Weldless Steel Garden ..... 75&5%

Rasps, Horse—

Diston's 75%
Heller Bros. ..... 70&5@70&10&5
McCaffrey's American St'd... 60&10&5
New Nicholson ..... 70&10@75%
See also Files.

Razors—

Boras—I C 60%
Fox Razors, No. 42.. ℔ doz. $20.00
Fox Razors, No. 44.. ℔ doz. $20.00
Fox Razors, No. 82, Platina... ℔ doz. $25.00 } 10%
Red Devil 50%
Silberstein:
Carbo Magnetic $18.00
Griffon, No. 65 ..... $15.00
Griffon, No. 00 ..... $12.00
All other Razors 40%

Safety Razors—

Silberstein 40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo 20%
Aluminum, German Silv., Bronze. 25%
1240 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 28 PN 20%
2904 P 33⅓%
2904 PN 33⅓%
0924 N 33⅓%
02084 N 33⅓%
002904 PN 33⅓%
802 N 33⅓%
986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN. 33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed ..... 70&10%
Bronzed 75%

Revolvers—

Single Action ..... 95¢@$1.00
Double Action, except 44 cal. $1.85
Double Action, 44 caliber $2.00
Automatic $3.45
Hammerless $4.00

Riddles, Hardware Grade

16 in. ..... *per doz.* $2.25@$2.50
17 in. ..... *per doz.* $2.50@$2.75
18 in. ..... *per doz.* $2.75@$3.00

Rings and Ringers—
Bull Rings—

	2	*2½*	*3 inch.*
Steel	$0.70	0.75	0.80 *doz.*
Copper	$1.00	1.15	1.40 *doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes $4.00@4.50
Hill's Ringers, Gray Iron ..... *doz.* 50@55¢
Hill's Ringers, Malleable Iron .. *doz.* 70@75¢
Blair's Rings ... *per gro.* $4.75@5.25
Blair's Ringers. per doz. $0.60@ .65
Brown's Rings.. per gro. $5.00@5.50
Brown's Ringers. per doz. $0.60@ .65

Rivets and Burrs—

Copper ..... 50&5%
Iron or Steel ..... 75@75&5%

Slotted, Clinch and Tubular—

Assorted in Boxes.
Slotted Clinch, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—

Acme, Stowell's Anti-Friction 50%
Barn Door, Sargent's list 60%
Cronk's Stay No. 65, $0.90; No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56 ..... $0.84
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53. 75¢
O. K. Adj. and Reversible No. 58. 50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%
Stowell's Barn Door Stay.. ℔ doz. $1.00
Swett's Anti-Friction 50%
Screw and Spike Stay ..... ℔ doz. 65¢
Hinge Adjustable Stay ..... ℔ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger: Pure ..... *lb.*, 12½¢
Sisal, 7-16 in. diam. and larger: Pure ..... *lb.*, 10¢
Sisal, 7-16 in. diam. and larger: No. 2 quality ..... *lb.* 8¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed ..... *lb.* 8¢
Pure ..... *lb.* 10¢
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed ..... *lb.* 8¢
Pure ..... *lb.* 10¢
Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger. 15½@16½¢
Common, ¼-in. and larger.. 10¢
In coils, ½¢ advance.
Jute Rope: Thread No. 1, ¼-in. & up. lb. 6½¢
Thread No. 2, ¼-in. & up, lb. 5¾¢
Old Colony Manila Transmission Rope ..... ℔ lb. 17½¢

Wire Rope—

Galvanized ..... 37½&2½%
Plain ..... 45&2½%

Ropes, Hammocks—
Covert Mfg. Co.:
Jute 50%
Sisal ..... 30&10%
Covert Saddlery Works..... 60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple..... 30&10%

Rules—
Boxwood ..... 60&10&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Flexifold ..... 27½&10&10&2½%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood..... 35&10%
Folding, Steel..... 33⅓&10%
Lufkin's Steel..... 50&10%
Lufkin's Lumber..... 60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag..... 40%
Zig Zag, Pin Joint..... 42½%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular 50%
Band ..... 50&10@60%
Cross Cuts..... 35&5%
Mulay, Mill and Drag..... 50%
One-Man Saw..... 40%
Wood Saws..... 40%
Hand, Compass, &c..... 40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide..... 60%
Band, ¼ to 1¾..... 60%
Crosscuts 50%
Narrow Crosscuts..... 55%
Mulay, Mill and Drag..... 50%
Framed Woodsaws..... 35%
Woodsaw Blades..... 35%
Woodsaw Rods..... 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination..... 30%
Compass, Key Hole, &c..... 25%
Butcher Saws and Blades..... 35%
C. E. Jennings & Co.'s:
Back Saws..... 25%
Butcher Saws..... 30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws..... 30%
Hand Saws..... 20&2½%
Wood Saw Blades..... 35%
Millers Falls:
Butcher Saws..... 15&10%
Star Saw Blades..... 15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws..... 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts..... 40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws..... 50%
Hack Saws..... 25@25&7½%
Butcher Saws..... 35@35&7½%
Hand Saws..... 25@25&7½%
Hand Saws, Bay State Brand..... 40%
Compass, Key Hole, &c..25@25&7½%
Wood Saws..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws..... 50%

Hack Saws—
Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades..... 25%
Keystone 40%
Hack Saw Frames..... 30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades..... 40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades..... 35%
Diamond Hack Saw Frames..... 50%
Star Hack Saws and Blades..... 15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades..... 25%
Victor Hack Saw Frames..... 40%

Scroll—
Barnes' No. 7, $15..... 25%
Barnes' Scroll Saw Blades..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20..... 20%
Lester, complete, $10.00..... 15&10%
Rogers, complete, $4.00..... 15&10%

Scalers, Fish—
Covert's Saddlery Works..... 60&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... doz. $5.50
Two Platforms, ½ oz. to 8 lbs. ..... doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales..... 50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2..... 60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables..... 50%
"The Standard" R. R. and Wagon.50%

Scrapers—
Box, 1 Handle.....doz. $2.00@2.25
Box, 2 Handle.....doz. $2.60@2.85
Ship....Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00..... 45%
Chapin-Stephens Co., Box, 30@30&10&10%

Screens, Window and Frames—
Air Line Pattern Screens.....60&10%
Flyer Pattern Screens..60&10@60&10&5%
Maine Screen Frames.....40&10&5%
Perfection Screens.....60&10@60&10&5%
Phillips' Screen Frames...60&5@60&10%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech.doz. 30@30&5%
Hand, Wood..... 30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99 ..... 75&15%
Coach, Gimlet Point, list Oct. 1, '99..... 75&10%
Hand Rail, list Jan. 1, '81.... 70&10@75%

Jack Screws—
Standard List..... 80@80&5%
Millers Falls..... 50&10&10%
Millers Falls, Roller..... 50&10%
P. S. & W..... 50%
Sargent ..... 70&10%
Swett Iron Works.....75&10@80&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron.... 50@50&10%
Flat or Round Head, Brass.... 50@50&10%

Set and Cap—
Set (Iron)..... 80%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap..... 75%
Hex. Hd. Cap..... 75%
Rd. Hd. Cap..... 60&10%
Fillister Hd. Cap.....60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron.....87½&10@..%
Round Head, Iron..85 &10@..%
Flat Head, Brass....85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws..... 87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes— *Per doz.*
Grass, No. 1, Plain Finish...$6.25
Clipper, Bronzed Webb....$6.50
No. 3 Clipper, Pol'd Webb..$6.75
No. 6 Clipper & Solid Steel.$7.00
Bush, Weed & Bramble, No. 2.$6.50
Grain, No. 1..... $8.25
Bronzed Webb, No. 1..... $8.50
Nos. 3 & 4 Clipper, Grain..$8.75
Solid Steel No. 6..... 39.25

Seeders, Raisin—
Enterprise ..... 25@30%

Sets— Awl and Tool—
Aiken's Sets, Awl and Tools:
No. 20, ℔ doz., $10.00..... 60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel..... ℔ doz sets $9.00

Sets, Nail—
Octagon ..... gro. $3.50@3.75
Buck Bros..... 27½%
Cannon's Diamond Point, ℔ gro.$12.40%
Mayhew's ..... ℔ gro. $9.00
Snell's Cor'gated, Cup Pt.... ℔ gro. $7.20
Snell's Knurled, Cup Pt.... ℔ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—
Regular list..... 75@75&10%

Saw—
Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut..... 30%
Plate 20%
Disston's Star and Monarch..... 25%
Morrill's No. 1, $15.00..... 50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00..... 50%
Nos. 10, 11, 95, $15.60..... 50%
No. 1 Old Style, $10.00..... 50%
Special, $16.25..... 50%
Giant Royal Cross Cut..... ℔ doz. $8.00
Royal, Hand..... ℔ doz. $4.50
Taintor Positive..... ℔ doz. $6.75

Shaving—
Fox Shaving Sets, No. 30..... ℔ doz., net, $24.00
Smith & Hemenway Co.'s..... 60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co..... 70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ℔ doz..... $1.50
Mounted Kitchen Sand Stone, ℔ doz..... $1.50
Natural Grit Carving Knife Hones, ℔ doz..... $3.00
Quick Cut Emery Carving Knife Hones, ℔ doz..... $1.50
Quick Edge Pocket Knife Hones, ℔ doz..... $2.50
} See $

Skate—
Smith & Hemenway Co..... 20%

Shaves, Spoke—
Iron ..... doz. $1.10@1.25
Wood ..... doz. $1.75@2.25
Bailey's (Stanley R. & L. Co.)..... 45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ℔ doz. $9.00..... 15&10%
Wood's F1 and F2..... 50%

Shears—
Cast Iron..	*7*	*8*	*9 in.*
Best	*$16.00*	*18.00*	*20.00 gro.*
Good ...	*$13.00*	*15.00*	*17.00 gro.*
Cheap ..	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fair quality, Nickel..75@75&10%
Tailors' Shears..... 40@40&10%
Acme Cast Shears..... 40@40&5%
Heinisch's Tailor's Shears..... 10%
Wilkinson's Sheep, 1900 list.....50&10%

Tinners' Snips—
Steel Blades..... 20&5@20&10%
Steel Laid Blades..... 40&10@50%
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips..... 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in..... 50%
Niagara Snips..... 40%
P., S. & W. Forged Handles..... 20%

Pruning Shears—
Cronk's Hand Shears..... 33⅓%
Cronk's Wood Handle Shears..... 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00..... 25%
Disston's Pruning Hook, ℔ doz. $12.00..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co..... 33⅓%
Wilkinson's Hedge, 1900 list..... 50&10%
Wilkinson's Lawn and Border..... 50%

Sheaves—Sliding Door—
Stowell's Anti-Friction..... 50%
Patent Roller, Hatfield's, Sargent's list ..... 70&10%
Reading 40%
R. & E. list..... 33⅓%
Wrightsville Hatfield Pattern..... 80%

Sliding Shutter—
Reading list..... 40%
R. & E. list..... 33⅓%
Sargent's list..... 10&10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge..... 65&10%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge.25&10%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge ..... 20&5%
Climax, Union, League, New Rival, 10 and 12 gauge..... 25&5%
Climax, Union, League, New Rival, 14, 16 and 20 gauge..... 20&5%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge..... 33⅓&5%
Robin Hood, Low Brass..... 20&10%
Robin Hood, High Brass..... 30&10%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade..... 40&5%
Loaded with Smokeless Powder, high grade..... 40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass..... 50%
Comets, High Brass..... 50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron ..... per keg $4.00
Steel ..... per keg $3.75
Burden's, all sizes..... ℔ keg $3.90

Shot—
Drop, up to B, 25-lb. bag....$1.70
Drop, B and larger ..... per 25-lb. bag, $1.95
Buck, 25-lb. bag..... $1.95
Chilled, 25-lb. bag..... $1.95

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle..... $2.75@$3.00
Wood and Mail, D. Handle, $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation ..... gro. $9.50@10.00
Hunter's Genuine ..... per gro. $12.00@12.50
Buffalo Metallic Blued, S. S. Co., ℔ gr.:
14&16 — 16&18 — 18&20
$13.20 — $13.50 — $14.40
Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00..... 20%

Sieves, Seamless Metallic
	Per dozen.			
Mesh 1½	*16*	*18*	*20*	
Iron Wire....$1.05	*1.05*	*1.10*	*1.20*	
Tinned Wire..$1.15	*1.15*	*1.20*	*1.30*	

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Standard list..... 60@60&10%
Barnes' low list..... 60&5%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron..... 80@80&10%
Steel ..... 40@40&10%

Slates, School—
Factory Shipments.
"D" Slates..... 50@50&10%
Eureka, Unexcelled Noiseless.. 60&5 tens
Victor A, Noiseless..... 60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German ..... 40@40&10%
Covert Mfg. Co.:
Derby ..... 30&2%
High Grade..... 45%
Jockey 35%
Trojan 45%
Yankee ..... 30&2%
Yankee Roller..... 30&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Harness Snaps, 1 inch..... 60&5%
Swivel Snaps..... 60%
Swivels 50%
Sargent's Patent Guarded....66⅔&10%

Snaths—
Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand..... 50&10%
Anchor, Rogers Brand..... 60%
Wm. Rogers & Son..... 60&10%

Miscellaneous—
German Silver..... 60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver..... 50%

Tinned Iron—
Teas ..... per gro. 45@50¢
Tables..... per gro. $0.50@$1.00

Springs— Door—
Chicago (Coil)..... 40&10%
Gem (Coil)..... 20%
Pullman (Coil)..... 25%
Reliance (Coil)..... 40&10%
Star (Coil)..... 30%
Torrey's Rod, 39 in..... ℔ doz. $1.10
Victor (Coil)..... 50&10&10%

Carriage, Wagon, &c.—
	Per lb
1¼ in. and Wider:	
Black ..... 4@4¼¢	
Half Bright..... 4@4¼¢	
Bright ..... 4¼@4¾¢	

Painted Seat Springs:
1½ x 2 x 26..... per pr. 42¢
1½ x 3 x 28..... per pr. 70¢

Sprinklers, Lawn—
Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24..... 30%
Pleuger & Henger Mfg. Co.:
Cactus 70%
Japanese 75%
Nationals 65%

Squares—
Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron. } *75&5@75&10%*
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2..... 50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade..... doz. $1.25
Tinned Iron..... doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind..... lb. 6@6½¢
Electricians', Association list.. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples ..... per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's 30%
Foster Bros. 30%
C. & A. Hoffmann's..... 40%

Steelyards — ....30@30&10%

Stocks and Dies—
Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates..... 25%
Green River..... 25%
Lightning Screw Plate..... 25%
Little Giant..... 25%
Reece's New Screw Plates..... 25%

Stoners, Cherry—
Enterprise ..... 25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit..... 60%
Gem Corundum Slips..... 60%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1904 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1..... $4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips..... 90¢
Rosy Red Slips..... 80¢
Washita Slips, Extra..... 80¢
Washita Slips, No. 1..... 70¢
Washita Slips, No. 2..... 40¢

33%&2

India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%
Hindostan No. 1, B'g'lar..℔ lb 8¢
Hindostan No. 1, Small..℔ lb 10¢
Axe Stones (all kinds).....33⅓%
Turkey Oil Stones, Extra, 5 to 8 in.....℔ lb 80¢
Queer Creek Stones, 4 to 8 in.20¢
Queer Creek Slips.....40¢
Sand Stone.....6¢

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots.....℔ gro. $9.00
One gross or more.....℔ gro. $7.20
Lots of 10 gross or more..℔ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S..℔ gro. $12.00
Lamoille S. S.....℔ gro. $11.00
White Mountain S. S.℔ gro. $9.00
Green Mountain S. S..℔ gro. $6.00
Extra Indian Pond S.S.℔ gro. $7.50
No. 1 Indian Pond S.S.℔ gro. $7.00
No. 2 Indian Pond S.S.℔ gro. $4.50
Leader Red End S. S.℔ gro. $4.50
Quick Cut Emery....℔ gro. $10.00
Pure Corundum.....℔ gro. $18.00
Crescent.....$7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓% — 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers.....℔ gro. $9.00

Stops— Bench—

Millers Falls.....15&10%
Morrill's, ℔ doz., No. 1, $10.00.....50%
Morrill's, No. 2, $12.50.....50%

Door—

Chapin-Stephens Co.....60@60&10%

Plane—

Chapin-Stephens Co.....20%

Straps— Box—

Cary's Universal, case lots.....35&10%

Hame—

Covert's Saddlery Works.....60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket.....doz. $1.60
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00.....20%

Stuffers, Sausage—

Enterprise Mfg. Co.....25@25&7½%
National Specialty Co., list Jan. 1, 1902.....30&5%

Sweepers, Carpet—

National Sweeper Co.:
℔ doz.
Louis XV, Roller Bearing, Gold Plated.....$120.00
Hepplewhite, Roller Bearing, Silver Plated.....$72.00
Sheraton, Roller Bearing, N'kel.$60.00
Ye Mission, Roller Bearing, Oxidized Copper.....$36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled.....$36.00
National Queen, Roller Bearing, Fancy Veneers.....$27.00
Loyal, Roller Bearing, Veneers, Nickeled.....$25.00
Triple Medal, Roller Bearing, Nickeled.....$24.00
Marion, Roller Bearing, N'kel.$24.00
Marion Queen, Roller Bearing, Nickeled.....$24.00
Monarch, Roller Bearing, N'kel.$22.00
Monarch, Roller Bearing, Jap..$20.00
Perpetual, Regular B'r'gs, N'kel.$20.00
Perpetual, Regular B'r'gs, Jap..$18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled.....$36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned.....$33.00
Auditorium (26 in. case), Roller Bearing, Nickeled.....$54.00
Mammoth (30 in. case), Roller Bearing, Nickeled.....$60.00

NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire.....℔ doz $25.00
Model A, Sterling.....℔ doz. $25.00
Model B, Sterling, Nickeled.....℔ doz. $23.00
Model B, Sterling, Japanned.....℔ doz. $21.00
Model C, Sterling.....℔ doz. $21.50
Model D, Sterling.....℔ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks..90&37½%
American Cut Tacks....90&37½%
Swedes Cut Tacks.....90&37½%
Swedes Upholsterers' Tacks... 90&50%
Gimp Tacks.....90&50%
Lace Tacks.....90&50%
Trimmers' Tacks.....90&37½%
Looking Glass Tacks.....65%
Bill Posters' and Railroad Tacks, 90&50%
Hungarian Nails.....85%
Finishing Nails.....70%
Trunk and Clout Nails....80&5%

NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks..... 90&6 or 7 tens
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10&60%
See also Nails, Wire.

Tanks, Oil— Each.

Emerald, S., S. & Co.....30-gal. $3.40
Emerald, S., S. & Co.....60-gal. $4.25
Queen City, S., S. & Co....30-gal. $3.65
Queen City, S., S. & Co....60-gal. $4.50

Tapes, Measuring—

American Asses' Skin..50&6—%
Patent Leather.....25@30&5%
Steel.....$3 1-3&5%
Chesterman's.....25@25&5%
Eddy Asses' Skin.....40&10@50%
Eddy Patent Leather.....25@30&5%
Eddy Steel.....40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin.....40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list..... 35@35&5%
Pocket.....35@35&5%
Lufkin's:
Asses' Skin.....40&10@50%
Metallic.....30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket.....40@40&5
Steel.....33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00

Thermometers—

Tin Case.....80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop.....80&2½%
Monitor, Cross Head, &c....70%

Brick Ties—

Niagara Brick Ties.....25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works.....60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White.....20@20&5%

Hay—

Myers' Hay Tools.....50%
Stowell's Hay Carriers.....50%
Stowell's Hay Forks.....50%
Stowell's Fork Pulleys.....50%

Miniature—

Smith & Hemenway Co.'s.....35%

Saw—

Atkins' Cross Cut Saw Tools.....40%
Simonds' Improved.....33⅓%
Simonds' Crescent.....25%

Ship—

L. & I. J. White.....25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro.....$11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida.....75@75&5%
Newhouse.....45@45&5%
Hawley & Norton.....65%
Victor.....70&10%
Oneida Community Jump.....50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I.....50%

Trowels—

Disston Brick and Pointing.....30%
Disston Plastering.....25%
Disston "Standard Brand" and Garden Trowels.....35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering.....25&5%
Woodrough & McParlin, Plastering.25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern.....50&10%
Western Pattern.....60&10%
Handy Trucks.....℔ doz. $16.00
Grocery.....℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern.....℔ doz. $18.50
McKinney Trucks.....each $10.00
Model Stove Trucks.....℔ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$4.25*	*4.75*	*5.25*

Galvanized Wash Tubs (S., S. & Co.):

No.	1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

Flax Twine:	*BO.*	*B.*
No. 9, ¼ and ⅛-lb. Balls	*.22@24¢*	
No. 12, ¼ and ½-lb. Balls	*.18@20¢*	
No. 18, ¼ and ½-lb. Balls	*.16@18¢*	
No. 24, ¼ and ½-lb. Balls	*.16@18¢*	
No. 36, ¼ and ½-lb. Balls	*.15@17¢*	
Chalk Line, Cotton Balls	*¼-lb. .25@30¢*	
Cotton Mops, 6, 9, 12 and 15 lb. to doz.	*.10@18¢*	
Cotton Wrapping, 5 Balls to lb., acording to quality	*.15½@20¢*	
American 2-Ply Hemp, ¼ and ½-lb. Balls	*.13@14¢*	
American 3-Ply Hemp, 1-lb. Balls	*.13@14¢*	
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)	*.8½¢*	
India 3-Ply Hemp, 1-lb. Balls	*.8½¢*	
India 3-Ply Hemp, 1½-lb. Balls.	*7@8¢*	
2, 3, 4 and 5-Ply Jute, ½-lb. Balls	*.9@10¢*	
Mason Line, Linen, ½-lb. Bls.	*.16¢*	
No. 20½ Mattress, ¼ and ½-lb. Balls	*.37¢*	
Wool, 3 to 6 ply....B 6¢; A 6½¢		

Vises—

Solid Box.....60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40%
Standard.....40%
Amateur.....25%
Columbian Hdw. Co.....40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting.....25@25&5%
Tiger Machinists'.....40%
Fisher & Norris Double Screw..15&10%
Hollands':
Machinists'.....40@40&5%
Keystone.....65&5@70%
Lewis Tool Co.:
Adjustable Jaw.....30%
Monarch.....50%
Solid Jaw.....50%
Merrill's.....20%
Millers Falls.....60&10%
Massey Vise Co.:
Clincher.....40%
Perfect.....20%
Lightning Grip.....20%
Parker's:
Victor.....20@25%
Regulars.....20@25%
Vulcan's.....40@45%
Combination Pipe.....55@60%
Prentiss.....20@25%
Sargent's.....40%
Snediker's X. L.....33⅓%
Stephens'.....33⅓%
Williamson Mfg Co, Double Swivel.. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30.....25%
Perfection Saw Clamps, ℔ doz....$4.50
Reading.....60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip.....15%
Perfect.....15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&10%
Holland's Combination Pipe..60@60&5
Massey's Quick Action Pipe.....40%
Parker's Combination Pipe:
87 Series.....60%
137 Series.....60&5%
No. 870.....40%
Williamson Mfg. Co. Double Swivel Combination Pipe.....40&5%

Wads—*Price per M.*

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger..$1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Dis. 15%

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled.....55%
Ground.....60%
Plain or Unground.....65%
Country Hollow Ware, per 100 lbs.....$2.75
White Enameled Ware:
Maslin Kettles.....70%
Covered Wares
Tinned and Turned.....40%
Enameled.....50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....60%
Iron Clad Ware.....70&10%
Lava, Enameled.....40&10%
Never Break Enameled.....50%

Tea Kettles—

Galvanized Tea Kettles:

Inch.....	*6*	*7*	*8*	*9*
Each....	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles.....60%
Porcelained.....50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles.....60%
Solid Steel Spiders and Griddles.65&5%
Solid Steel Kettles.....60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame.$3.25
Red Star, family size, stationary protector.....$3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.90
Cable Cross, family size, stationary protector.....$3.15
Single Zinc Surface:
Naiad, family size, open back, perforated.....$2.65
Saginaw Globe, protector, family size, ventilated back.....$2.50
Brass Surface:
Brass King, Single Surface, open back.....$3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface.....$3.25
Glass Surface:
Glass King, Single Surface, open back.....$3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back.....$3.25

Washers—Leather, Axle—

Solid.....80&10@80&10&10%
Patent.....90@90&5%

Coil:	*¾*	*1*	*1¼*	*1½ Inch.*
	10¢	*11¢*	*12¢*	*13¢ per box*

Iron or Steel—

Size bolt....	*5-16*	*⅜*	*½*	*⅝*	*¾*
Washers...	*$6.00*	*5.10*	*3.80*	*3.60*	*3.50*

The above prices are based on 5.50¢ off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Weather Strip—

Flexible Felt—

Lined, per 100 ft., $2; $3; $4.....40&10%
Moore's Unlined, per 100 ft., $2; $3; $4.....50&10%

Wedges—

Oil Finish.....lb. 2.70@2.80¢

Weights—Hitching—

Covert Mfg. Co.....40&2%
Covert's Saddlery Works.....60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District...$27.50@$28.00
Southern Territory.$20.00@$23.00
Western and Central Districts.....$23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9.....80%
10 to 18.....80&2½%
19 to 26.....80&7½%
27 to 36.....80&2½%
Galvanized:
6 to 9.....75&5%
10 to 14.....75&7½%
15 to 16.....72½&10&2½%
19 to 26.....75%
27 to 36.....72½%
Coppered:
6 to 9.....75&5%
10 to 14.....75&7½%
15 to 18.....72½&10&2½%
19 to 26.....75&10&5%
27 to 36.....75%
Tinned:
6 to 14.....75&10&2½%
15 to 18.....75&7½%
Annealed, Steel and Tinned, on Spools..70&10&10@70&10&10&10%
Brass and Copper on Spools... 60&5@60&10&5%
Brass, list Feb. 26, '96.....15%
Copper, list Feb. 26, '96.....25%
Cast Steel Wire.....50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03.90&30@90&30&10%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft..3 ¢
Nos. 4 and 5 Mesh, sq. ft..3½¢
No. 6 Mesh, sq. ft.....3½¢
No. 8 Mesh, sq. ft.'.....4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural....75&10@75&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S.....45@45&5%
Acme.....60&10%
Alligator Pattern.....70%
Bull Dog.....70%
Bemis & Call's:
Adjustable S.....40%
Adjustable S Pipe.....40%
Bemis Pipe.....60%
Briggs Pattern.....40%
Combination Black.....40&5%
Combination Bright.....40%
Merrick Pattern.....50%
Boardman's.....40%
Coes' Genuine Knife Hdl..40&10&5&5
Coes' Genuine Steel Hdl..40&10&5&5
Coes' Genuine Key Model..40&10&5&5
Coes', Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer.....40&10%
Eagle.....50&10%
Elgin Wrenches, ℔ doz.....$6.25
Elgin Rethreading Attachment, one die, ℔ doz.....$6.25
Elgin Extra Dies, ℔ doz.....$3.00
Elgin Extra Jaws, ℔ doz.....$1.75
Elgin Monkey Wrench Pipe Jaws, ℔ doz.....$2.10
Gem Pocket.....30%
Hercules.....70%
W. & B. Machinist:
Case lots.....50&5%
Less than case lots.....50%
Solid Handles, P., S. & W...50&10&60
Stillson.....65%
Vulcan Chain.....50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz.....$0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ℔ doz.....$48.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92.....90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed..70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'.....list net

Zinc—

Sheet.....per 100 lbs., $8.00@8.25